



119

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Spytek, Kimberly A  
Guo, Xiaojia (Sasha)  
Fernandes, Elma  
Li, Li  
Kekuda, Ramesh  
Liu, Xiahong  
Casman, Stacie  
Boldog, Ferenc  
Patturajan, Meera  
Blalock, Angela  
Ballinger, Robert  
Vernet, Corine  
Tchernev, Velizar T  
Malyankar, Uriel M  
Gusev, Vladimir  
Rastelli, Luca  
Mezes, Peter S  
Ellerman, Karen  
Heyes, Melvin P  
Herrman, John  
Pena, Carol E A  
Shimkets, Richard A  
Taupier Jr, Raymond J  
Moore, Noelle  
Shenoy, Suresh  
Edinger, Shlomit  
Gunther, Erik  
Stone, Dave  
Millet, Isabelle  
Peyman, John  
Smithson, Glenda

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 Ser Ser Asn Leu Trp Val Pro Ser Val Tyr Cys Ser Ser Leu Ala Cys



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Ala Pro Phe Asp Gly Ile Leu Gly Leu Ala Tyr Pro Ser Ile Ser Ser  
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Ser Gly Ala Thr Pro Val Phe Asp Asn Ile Trp Asn Gln Gly Leu Val  
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Ser Gln Asp Leu Phe Ser Val Tyr Leu Ser Ala Asp Asp Lys Ser Gly  
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Ser Val Val Ile Phe Gly Gly Ile Asp Ser Ser Tyr Tyr Thr Gly Ser  
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Leu Asn Trp Val Pro Val Thr Val Glu Gly Tyr Trp Gln Ile Thr Val  
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Gln Ala Ile Val Asp Thr Gly Thr Ser Leu Leu Thr Gly Pro Thr Ser  
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 agtgtcgtat ccgaggatgc ctgtcatgct gccggtgccg taggtgatgg agactgtctc 780  
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<210> 12  
 <211> 374

<212> PRT

<213> Homo sapiens

<400> 12

Met Tyr Lys Val Pro Leu Ile Arg Lys Lys Ser Leu Arg Arg Thr Leu  
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Ser Glu Arg Gly Leu Leu Lys Asp Phe Leu Lys Lys His Asn Leu Asn  
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Pro Ala Arg Lys Tyr Phe Pro Gln Trp Glu Ala Pro Thr Leu Val Asp  
35 40 45  
Glu Gln Pro Leu Glu Asn Tyr Leu Asp Met Glu Tyr Phe Gly Thr Ile  
50 55 60  
Gly Ile Gly Thr Pro Ala Gln Asp Phe Thr Val Val Phe Asp Thr Gly  
65 70 75 80  
Ser Ser Asn Leu Trp Val Pro Ser Val Tyr Cys Ser Ser Leu Ala Cys  
85 90 95  
Thr Asn His Asn Arg Phe Asn Pro Glu Asp Ser Ser Thr Tyr Gln Ser  
100 105 110  
Thr Ser Glu Thr Val Ser Ile Thr Tyr Gly Thr Gly Ser Met Thr Gly  
115 120 125  
Ile Leu Gly Tyr Asp Thr Val Gln Val Gly Gly Ile Ser Asp Thr Asn  
130 135 140  
Gln Ile Phe Gly Leu Ser Glu Thr Glu Pro Gly Ser Phe Leu Tyr Tyr  
145 150 155 160  
Ala Pro Phe Asp Asp Ile Leu Gly Leu Ala Tyr Pro Ser Ile Ser Ser  
165 170 175  
Ser Gly Ala Thr Pro Val Phe Asp Asn Ile Trp Asn Gln Gly Leu Val  
180 185 190  
Ser Gln Asp Leu Phe Ser Val Tyr Leu Ser Ala Asp Asp Gln Ser Gly  
195 200 205  
Ser Val Val Ile Phe Gly Gly Ile Asp Ser Ser Tyr Tyr Thr Gly Ser  
210 215 220  
Leu Asn Trp Val Pro Val Thr Val Glu Gly Tyr Trp Gln Ile Thr Val  
225 230 235 240

Asp Ser Ile Thr Met Asn Gly Glu Ala Ile Ala Cys Ala Glu Gly Cys  
                     245                    250                    255

Gln Ala Ile Val Asp Thr Gly Thr Ser Leu Leu Thr Gly Pro Thr Ser  
                     260                    265                    270

Pro Ile Ala Asn Ile Gln Ser Asp Ile Gly Ala Ser Glu Asn Ser Asp  
                     275                    280                    285

Gly Asp Met Val Val Ser Cys Ser Ala Ile Ser Ser Leu Pro Asp Ile  
                     290                    295                    300

Val Phe Thr Ile Asn Gly Val Gln Tyr Pro Val Pro Pro Ser Ala Tyr  
 305                    310                    315                    320

Ile Leu Gln Ser Glu Gly Ser Cys Ile Ser Gly Phe Gln Gly Met Asn  
                     325                    330                    335

Leu Pro Thr Glu Ser Gly Glu Leu Trp Ile Leu Gly Asp Val Phe Ile  
                     340                    345                    350

Arg Gln Tyr Phe Thr Val Phe Asp Arg Ala Asn Asn Gln Val Ser Leu  
                     355                    360                    365

Ala Pro Val Ala Val Asp  
                     370

<210> 13  
 <211> 479  
 <212> DNA  
 <213> Homo sapiens

<400> 13  
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 aactttgtct cactctgaaa gcagaaaatg gccgaaaggt tttggcaagc aaccttcttg 180  
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 ttacaagtgt ggtcagggttc cctgataact ctttgtatga tcatgtgggt gcagtacctt 300  
 gcaggaacgg gaacgtcatt ctgagggtag tccacatgca agtggttctaa agttgacatc 360  
 actgcttcat cattcacctc attttcccag aacagaagca ccaagaaaat taccaccatt 420  
 gccattgaga gaagagatct cagactcggg agctgatctt gagttattta acatagcca 479

<210> 14  
 <211> 141  
 <212> PRT

<213> Homo sapiens

<400> 14

Met Ala Met Val Ile Ile Phe Leu Val Leu Leu Phe Trp Glu Asn Glu  
1 5 10 15

Val Asn Asp Glu Ala Val Met Ser Thr Leu Glu His Leu His Val Asp  
20 25 30

Tyr Pro Gln Asn Asp Val Pro Val Pro Ala Arg Tyr Cys Asn His Met  
35 40 45

Ile Ile Gln Arg Val Ile Arg Glu Pro Asp His Thr Cys Lys Lys Glu  
50 55 60

His Val Phe Ile His Glu Arg Pro Arg Lys Ile Asn Gly Ile Cys Ile  
65 70 75 80

Ser Pro Lys Lys Val Ala Cys Gln Asn Leu Ser Ala Ile Phe Cys Phe  
85 90 95

Gln Ser Glu Thr Lys Phe Lys Met Thr Val Cys Gln Leu Ile Glu Gly  
100 105 110

Thr Arg Tyr Pro Ala Cys Arg Tyr His Tyr Ser Pro Thr Glu Gly Phe  
115 120 125

Val Leu Val Thr Cys Asp Asp Leu Arg Pro Asp Ser Phe  
130 135 140

<210> 15

<211> 1037

<212> DNA

<213> Homo sapiens

<400> 15

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gaagctgggtg atcatcaagc agattccagt ggaacagatg accaaggaag agcggcaggc 180  
agcccagaat gagtgccagg tcctcaagct gctcaaccac cccaatgtca ttgagtacta 240  
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acttagtcat ctgccaa 1037

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<210> 16

<211> 326

<212> PRT

<213> Homo sapiens

<400> 16

```

Met Glu Lys Tyr Glu Arg Ile Arg Val Val Gly Arg Gly Ala Phe Gly
  1              5              10              15

```

```

Ile Val His Leu Cys Leu Arg Lys Ala Asp Gln Lys Leu Val Ile Ile
      20              25              30

```

```

Lys Gln Ile Pro Val Glu Gln Met Thr Lys Glu Glu Arg Gln Ala Ala
      35              40              45

```

```

Gln Asn Glu Cys Gln Val Leu Lys Leu Leu Asn His Pro Asn Val Ile
      50              55              60

```

```

Glu Tyr Tyr Glu Asn Phe Leu Glu Asp Lys Ala Leu Met Thr Ala Met
      65              70              75              80

```

```

Glu Tyr Ala Pro Gly Gly Thr Leu Ala Glu Phe Ile Gln Lys Arg Cys
      85              90              95

```

```

Asn Ser Leu Leu Glu Glu Glu Thr Ile Leu His Phe Phe Val Gln Ile
      100             105             110

```

```

Leu Leu Ala Leu His His Val His Thr His Leu Ile Leu His Arg Asp
      115             120             125

```

```

Leu Lys Thr Gln Asn Ile Leu Leu Asp Lys His Arg Met Val Val Lys
      130             135             140

```

```

Ile Gly Asp Phe Gly Ile Ser Lys Ile Leu Ser Ser Lys Ser Lys Ala
      145             150             155             160

```

```

Tyr Thr Val Val Gly Thr Pro Cys Tyr Ile Ser Pro Glu Leu Cys Glu
      165             170             175

```



Gly Lys Pro Tyr Asn Gln Lys Ser Asp Ile Trp Ala Leu Gly Cys Val  
180 185 190

Leu Tyr Glu Leu Ala Ser Leu Lys Arg Ala Phe Glu Ala Ala Asn Leu  
195 200 205

Pro Ala Leu Val Leu Lys Ile Met Ser Gly Thr Phe Ala Pro Ile Ser  
210 215 220

Asp Arg Tyr Ser Pro Glu Leu Arg Gln Leu Val Leu Ser Leu Leu Ser  
225 230 235 240

Leu Glu Pro Ala Gln Arg Pro Pro Leu Ser His Ile Met Ala Gln Pro  
245 250 255

Leu Cys Ile Arg Ala Leu Leu Asn Leu His Thr Asp Val Gly Ser Val  
260 265 270

Arg Met Arg Arg Pro Val Gln Gly Gln Arg Ala Val Leu Gly Gly Arg  
275 280 285

Val Trp Ala Pro Ser Gly Ser Thr Leu Ser Pro Leu Thr Val Ser Ala  
290 295 300

Thr Ala Cys Thr Tyr Thr Leu Ser Ser Phe Thr Ile Asp Thr Leu His  
305 310 315 320

His Asp Leu Lys Thr Gln  
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<210> 17

<211> 1591

<212> DNA

<213> Homo sapiens

<400> 17

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gtccgctcgc agccgcgccc cctgtttcag tggagcaagt ggaagaagag gatgggctcg 240  
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gaccacttcc agatccttcg ggccattggg aagggcagct ttggcaagggt agtgtgcatt 360  
gtgcagaagc gggacacgga gaagatgtac gccatgaagt acatgaacaa gcagcagtgc 420  
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catgtcttcc tggagaacct ctggtattca ttccaagatg aggaggacat gttcatggtg 540  
gtagacctgc ttctgggtgg agacctacgt taccacctgc agcagaacgt gcagttctcc 600  
gaggacacag tgaggctgta catctgcgag atggcactgg ctctggacta cctgcgcggc 660

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1591

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<210> 18

<211> 488

<212> PRT

<213> Homo sapiens

<400> 18

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Met Arg Ser Gly Ala Glu Arg Arg Gly Ser Ser Ala Ala Ala Ser Pro
  1             5             10             15

```

```

Gly Ser Pro Pro Pro Gly Arg Ala Arg Pro Ala Gly Ser Asp Ala Pro
          20             25             30

```

```

Ser Ala Leu Pro Pro Pro Ala Ala Gly Gln Pro Arg Ala Arg Asp Ser
          35             40             45

```

```

Gly Asp Val Arg Ser Gln Pro Arg Pro Leu Phe Gln Trp Ser Lys Trp
          50             55             60

```

```

Lys Lys Arg Met Gly Ser Ser Met Ser Ala Ala Thr Ala Arg Arg Pro
          65             70             75             80

```

```

Val Phe Asp Asp Lys Glu Asp Val Asn Phe Asp His Phe Gln Ile Leu
          85             90             95

```

```

Arg Ala Ile Gly Lys Gly Ser Phe Gly Lys Val Val Cys Ile Val Gln
          100            105            110

```

```

Lys Arg Asp Thr Glu Lys Met Tyr Ala Met Lys Tyr Met Asn Lys Gln
          115            120            125

```

Gln Cys Ile Glu Arg Asp Glu Val Arg Asn Val Phe Arg Glu Leu Glu  
 130 135 140

Ile Leu Gln Glu Ile Glu His Val Phe Leu Val Asn Leu Trp Tyr Ser  
 145 150 155 160

Phe Gln Asp Glu Glu Asp Met Phe Met Val Val Asp Leu Leu Leu Gly  
 165 170 175

Gly Asp Leu Arg Tyr His Leu Gln Gln Asn Val Gln Phe Ser Glu Asp  
 180 185 190

Thr Val Arg Leu Tyr Ile Cys Glu Met Ala Leu Ala Leu Asp Tyr Leu  
 195 200 205

Arg Gly Gln His Ile Ile His Arg Asp Val Lys Pro Asp Asn Ile Leu  
 210 215 220

Leu Asp Glu Arg Gly His Ala His Leu Thr Asp Phe Asn Ile Ala Thr  
 225 230 235 240

Ile Ile Lys Asp Gly Glu Arg Ala Thr Ala Leu Ala Gly Thr Lys Pro  
 245 250 255

Tyr Met Ala Pro Glu Ile Phe His Ser Phe Val Asn Gly Gly Thr Gly  
 260 265 270

Tyr Ser Phe Glu Val Asp Trp Trp Ser Val Gly Val Met Ala Tyr Glu  
 275 280 285

Leu Leu Arg Gly Trp Arg Pro Tyr Asp Ile His Ser Ser Asn Ala Val  
 290 295 300

Glu Ser Leu Val Gln Leu Phe Ser Thr Val Ser Val Gln Tyr Val Pro  
 305 310 315 320

Thr Trp Ser Lys Glu Met Val Gly Leu Leu Arg Lys Val Leu Leu Thr  
 325 330 335

Val Asn Pro Glu His Arg Leu Ser Ser Leu Gln Asp Val Gln Ala Ala  
 340 345 350

Pro Ala Leu Ala Gly Val Leu Trp Asp His Leu Ser Glu Lys Arg Val  
 355 360 365

Glu Pro Gly Phe Val Pro Asn Lys Gly Arg Leu His Cys Asp Pro Thr  
 370 375 380

Phe Glu Leu Glu Glu Met Ile Leu Glu Ser Arg Pro Leu His Lys Lys  
 385 390 395 400

Lys Lys Arg Leu Ala Lys Asn Lys Ser Arg Asp Asn Ser Arg Asp Ser  
 405 410 415

Ser Gln Ser Glu Asn Asp Tyr Leu Gln Asp Cys Leu Asp Ala Ile Gln  
 420 425 430

Gln Asp Phe Val Ile Phe Asn Arg Glu Lys Leu Lys Arg Ser Gln Asp  
 435 440 445

Leu Pro Arg Glu Pro Leu Pro Ala Pro Glu Ser Arg Asp Ala Ala Glu  
 450 455 460

Pro Val Glu Asp Glu Ala Glu Arg Ser Ala Leu Pro Met Cys Gly Pro  
 465 470 475 480

Ile Cys Pro Ser Ala Gly Ser Gly  
 485

<210> 19

<211> 581

<212> DNA

<213> Homo sapiens

<400> 19

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 tggggatgac agccaggacc ctagaggcag acgacaaggt catggaggaa ttcacagct 480  
 ttctcaggac cctgcccgtg cacatgtgga tcttcctgga cgttaccag gcggaacagt 540  
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<210> 20

<211> 171

<212> PRT

<213> Homo sapiens

<400> 20

Met Gln Cys Leu Leu Leu Thr Leu Ser Met Ala Leu Val Cys Ala Ile  
 1 5 10 15

Gln Ala Arg Asp Ile Pro Gln Thr Lys Gln Asp Val Glu Leu Pro Lys  
 20 25 30

Leu Ala Gly Thr Trp Tyr Ser Met Ala Met Val Ala Ser Asp Phe Ser  
 35 40 45

Leu Leu Glu Thr Val Glu Ala Pro Leu Arg Val Asn Ile Thr Ser Leu  
 50 55 60

Trp Pro Thr Pro Glu Gly Asn Leu Glu Ile Ile Leu His Arg Trp Glu  
 65 70 75 80

His His Arg Cys Val Glu Arg Thr Val Leu Ala Gln Lys Thr Glu Asp  
 85 90 95

Pro Ala Val Phe Met Val Asp Arg Ser Arg Ser Tyr Val Phe Phe Cys  
 100 105 110

Met Gly Thr Thr Thr Pro Ser Ala Asp His His Thr Met Cys Gln Tyr  
 115 120 125

Leu Gly Met Thr Ala Arg Thr Leu Glu Ala Asp Asp Lys Val Met Glu  
 130 135 140

Glu Phe Ile Ser Phe Leu Arg Thr Leu Pro Val His Met Trp Ile Phe  
 145 150 155 160

Leu Asp Val Thr Gln Ala Glu Gln Cys Arg Val  
 165 170

<210> 21

<211> 4718

<212> DNA

<213> Homo sapiens

<400> 21

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<210> 22

<211> 1419

<212> PRT

<213> Homo sapiens

<400> 22

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Met Glu Glu Glu Lys Asp Asp Ser Pro Gln Leu Thr Gly Ile Ala Val
  1                   5                   10                   15

```

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Gly Ala Leu Leu Ala Leu Ala Leu Val Gly Val Leu Ile Leu Phe Met
          20                   25                   30

```

```

Phe Arg Arg Leu Arg Gln Phe Arg Gln Ala Gln Pro Thr Pro Gln Tyr
          35                   40                   45

```

```

Arg Phe Arg Lys Arg Asp Lys Val Met Phe Tyr Gly Arg Lys Ile Met
          50                   55                   60

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```

Arg Lys Val Thr Thr Leu Pro Asn Thr Leu Val Glu Asn Thr Ala Leu
          65                   70                   75                   80

```

```

Pro Arg Gln Arg Ala Arg Lys Arg Thr Lys Val Leu Ser Leu Ala Lys
          85                   90                   95

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Arg Ile Leu Arg Phe Lys Lys Glu Tyr Pro Ala Leu Gln Pro Lys Glu

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100	105	110
Pro Pro Pro Ser Leu Leu Glu Ala Asp Leu Thr Glu Phe Asp Val Lys		
115	120	125
Asn Ser His Leu Pro Ser Glu Val Leu Tyr Met Leu Lys Asn Val Arg		
130	135	140
Val Leu Gly His Phe Glu Lys Pro Leu Phe Leu Glu Leu Cys Lys His		
145	150	155
Ile Val Phe Val Gln Leu Gln Glu Gly Glu His Val Phe Gln Pro Arg		
165	170	175
Glu Pro Asp Pro Ser Ile Cys Val Val Gln Asp Gly Arg Leu Glu Val		
180	185	190
Cys Ile Gln Asp Thr Asp Gly Thr Glu Val Val Val Lys Glu Val Leu		
195	200	205
Ala Gly Asp Ser Val His Ser Leu Leu Ser Ile Leu Asp Ile Ile Thr		
210	215	220
Gly His Ala Ala Pro Tyr Lys Thr Val Ser Val Arg Ala Ala Ile Pro		
225	230	235
Ser Thr Ile Leu Arg Leu Pro Ala Ala Ala Phe His Gly Val Phe Glu		
245	250	255
Lys Tyr Pro Glu Thr Leu Val Arg Val Val Gln Leu Gln Ile Ile Met		
260	265	270
Val Arg Leu Gln Arg Val Thr Phe Leu Ala Leu His Asn Tyr Leu Gly		
275	280	285
Leu Thr Thr Glu Leu Phe Asn Ala Glu Ser Gln Ala Ile Pro Leu Val		
290	295	300
Ser Val Ala Ser Val Ala Ala Gly Lys Ala Lys Lys Gln Val Phe Tyr		
305	310	315
Gly Glu Glu Glu Arg Leu Lys Lys Pro Pro Arg Leu His Glu Ser Cys		
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Asp Ser Ala Asp His Gly Gly Gly Arg Pro Ala Ala Ala Gly Pro Leu		
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Leu Lys Arg Ser His Ser Val Pro Ala Pro Ser Ile Arg Lys Gln Ile		



355	360	365
Leu Glu Glu Leu Glu Lys Pro Gly Ala Gly Asp Pro Asp Pro Ser Ala		
370	375	380
Pro Gln Gly Gly Pro Gly Ser Ala Thr Ser Asp Leu Gly Met Ala Cys		
385	390	395 400
Asp Arg Ala Arg Val Phe Leu His Ser Asp Glu His Pro Gly Ser Ser		
405	410	415
Val Ala Ser Lys Ser Arg Lys Ser Val Met Val Ala Glu Ile Pro Ser		
420	425	430
Thr Val Ser Gln His Ser Glu Ser His Thr Asp Glu Thr Leu Ala Ser		
435	440	445
Arg Lys Ser Asp Ala Ile Phe Arg Ala Ala Lys Lys Asp Leu Leu Thr		
450	455	460
Leu Met Lys Leu Glu Asp Ser Ser Leu Leu Asp Gly Arg Val Ala Leu		
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Leu His Val Pro Ala Cys Thr Val Val Ser Met Gln Gly Asp Gln Asp		
485	490	495
Ala Ser Ile Leu Phe Val Val Leu Gly Leu Leu His Val Tyr Gln Arg		
500	505	510
Lys Ile Cys Ser Gln Glu Asp Thr Cys Leu Phe Ser Arg Ala Pro Gly		
515	520	525
Asp Ser Ser Leu Leu Asp Gly Arg Val Ala Leu Leu His Val Pro Ala		
530	535	540
Gly Thr Val Val Ser Arg Gln Gly Asp Gln Asp Ala Ser Ile Leu Phe		
545	550	555 560
Val Val Ser Gly Leu Leu His Val Tyr Gln Arg Lys Ile Gly Ser Gln		
565	570	575
Glu Asp Thr Cys Leu Phe Leu Thr Arg Pro Gly Glu Met Val Gly Gln		
580	585	590
Leu Ala Val Leu Thr Gly Glu Pro Leu Ile Phe Thr Val Lys Ala Asn		
595	600	605
Arg Asp Cys Ser Phe Leu Ser Ile Ser Lys Ala His Phe Tyr Glu Ile		

610	615	620
Met Arg Lys Gln Pro Thr Val Val Leu Gly Val Ala His Thr Val Val		
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Lys Arg Met Ser Ser Phe Val Arg Gln Ile Asp Phe Ala Leu Asp Trp		
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Val Glu Val Glu Ala Gly Arg Ala Ile Tyr Arg Gln Gly Asp Lys Ser		
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Asp Cys Thr Tyr Ile Met Leu Ser Gly Arg Leu Arg Ser Val Ile Arg		
	675	680 685
Lys Asp Asp Gly Lys Lys Arg Leu Ala Gly Glu Tyr Gly Arg Gly Asp		
	690	695 700
Leu Val Gly Val Val Glu Thr Leu Thr His Gln Ala Arg Ala Thr Thr		
	705	710 715 720
Val His Ala Val Arg Asp Ser Glu Leu Ala Lys Leu Pro Ala Gly Ala		
	725	730 735
Leu Thr Cys Ile Lys Arg Arg Tyr Pro Gln Val Val Thr Arg Leu Ile		
	740	745 750
His Leu Leu Gly Glu Lys Ile Leu Gly Ser Leu Gln Gln Gly Pro Val		
	755	760 765
Thr Gly His Gln Leu Gly Leu Pro Thr Glu Gly Ser Lys Trp Asp Leu		
	770	775 780
Gly Asn Pro Ala Val Asn Leu Ser Thr Val Ala Val Met Pro Val Ser		
	785	790 795 800
Glu Glu Val Pro Leu Thr Ala Phe Ala Leu Glu Leu Glu His Ala Leu		
	805	810 815
Ser Ala Ile Gly Pro Pro Leu Leu Leu Thr Ser Asp Asn Ile Lys Arg		
	820	825 830
Arg Leu Gly Ser Ala Ala Leu Asp Ser Val His Glu Tyr Arg Leu Ser		
	835	840 845
Ser Trp Leu Gly Gln Gln Glu Asp Thr His Arg Ile Val Leu Tyr Gln		
	850	855 860
Val Asp Gly Thr Leu Thr Pro Trp Thr Gln Arg Cys Val Arg Gln Ala		

865		870		875		880
Asp Cys Ile Leu Ile Val Gly Leu Gly Asp Gln Glu Pro Thr Val Gly						
	885		890		895	
Glu Leu Glu Arg Met Leu Glu Ser Thr Ala Val Arg Ala Gln Lys Gln						
	900		905		910	
Leu Ile Leu Leu His Arg Glu Glu Gly Pro Ala Pro Ala Arg Thr Val						
	915		920		925	
Glu Trp Leu Asn Met Arg Ser Trp Cys Ser Gly His Leu His Leu Cys						
	930		935		940	
Cys Pro Arg Arg Val Phe Ser Arg Arg Ser Leu Pro Lys Leu Val Glu						
	945		950		955	960
Met Tyr Lys His Val Phe Gln Arg Pro Pro Asp Arg His Ser Asp Phe						
		965		970		975
Ser Arg Leu Ala Arg Val Leu Thr Gly Asn Ala Ile Ala Leu Val Leu						
	980		985		990	
Gly Gly Gly Gly Ala Ser Met Thr Ser Leu Met Lys Ala Ala Leu Asp						
	995		1000		1005	
Leu Thr Tyr Pro Ile Thr Ser Met Phe Ser Gly Ala Gly Phe Asn Ser						
	1010		1015		1020	
Ser Ile Phe Ser Val Phe Lys Asp Gln Gln Ile Glu Asp Leu Trp Ile						
	1025		1030		1035	1040
Pro Tyr Phe Ala Ile Thr Thr Asp Ile Thr Ala Ser Ala Met Arg Val						
		1045		1050		1055
His Thr Asp Gly Ser Leu Trp Trp Tyr Val Arg Ala Ser Met Ser Leu						
	1060		1065		1070	
Ser Gly Tyr Met Pro Pro Leu Cys Asp Pro Lys Asp Gly His Leu Leu						
	1075		1080		1085	
Met Asp Gly Gly Tyr Ile Asn Asn Leu Pro Ala Ala Ser Ala Pro Arg						
	1090		1095		1100	
Ser Leu Gly Trp Asn Thr Phe Ser Leu Glu Tyr Ala Lys Gly Lys Cys						
	1105		1110		1115	1120
Gln Ala Gly Ile Arg Ala Pro Arg Thr Cys Thr Arg Val Tyr Met His						

1125	1130	1135
Thr Gln Ala Pro Ala Ala Cys Ala Pro Ala Tyr Gly Pro Val Cys Gln		
1140	1145	1150
Leu Ser Ser Met Gln Asn Lys Gly Gln Val Glu Glu Leu Gly Ala Ile		
1155	1160	1165
Lys Pro His Leu Cys Pro Gln Ser Glu Thr Asn Ser Leu Gln Gly Val		
1170	1175	1180
Thr Arg Ala Gly Phe Ser Leu Ala Asp Val Ala Arg Ser Met Gly Ala		
1185	1190	1195
Lys Val Val Ile Ala Ile Asp Val Gly Ser Arg Asp Glu Thr Asp Leu		
1205	1210	1215
Thr Asn Tyr Gly Asp Ala Leu Ser Gly Trp Trp Leu Leu Trp Lys Arg		
1220	1225	1230
Trp Asn Pro Leu Ala Thr Lys Val Lys Val Leu Asn Met Ala Glu Ile		
1235	1240	1245
Gln Thr Arg Leu Ala Tyr Val Cys Cys Val Arg Gln Leu Glu Val Val		
1250	1255	1260
Lys Ser Ser Asp Tyr Cys Glu Tyr Leu Arg Pro Pro Ile Asp Ser Tyr		
1265	1270	1275
Ser Thr Leu Asp Phe Gly Lys Phe Asn Glu Ile Cys Glu Val Gly Tyr		
1285	1290	1295
Gln His Gly Arg Thr Val Phe Asp Ile Trp Gly Arg Ser Gly Val Leu		
1300	1305	1310
Glu Lys Met Leu Arg Asp Gln Gln Gly Pro Ser Lys Lys Pro Ala Ser		
1315	1320	1325
Ala Val Leu Thr Cys Pro Asn Ala Ser Phe Thr Asp Leu Ala Glu Ile		
1330	1335	1340
Val Ser Arg Ile Glu Pro Ala Lys Pro Ala Met Val Asp Asp Glu Ser		
1345	1350	1355
Asp Tyr Gln Thr Glu Tyr Glu Glu Glu Leu Leu Asp Val Pro Arg Asp		
1365	1370	1375
Ala Tyr Ala Asp Phe Gln Ser Thr Ser Ala Gln Gln Gly Ser Asp Leu		

1380                      1385                      1390  
 Glu Asp Glu Ser Ser Leu Arg His Arg His Pro Ser Leu Ala Phe Pro  
       1395                      1400                      1405  
  
 Lys Leu Ser Glu Gly Ser Ser Asp Gln Asp Gly  
       1410                      1415

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 <211> 815  
 <212> DNA  
 <213> Homo sapiens

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 ccccggtccc ttctacttcg ccatcaccgt catcactacc atcgagtacg gccacgccgc 240  
 gccgggtacg gactccggca aggtcttctg catgttctac gcgctcctgg gcatcccgc 300  
 gacgtggtc actttccaga gcctgggcga acggtgaac gcggtgggtgc ggcgcctcct 360  
 gttggcggcc aagtgtgcc tgggcctgcg gtggacgtgc gtgtccacgg agaacctggt 420  
 ggtggccggg ctgctggcgt gtgccgccac cctggccctc ggggccgtcg ctttctcgca 480  
 cttcgagggc tggaccttct tccacgccta ctactactgc ttcacacccc tcaccacat 540  
 cggcttcggc gacaacctgg gcttttcgcc cccctcgagc ccgggggtcg tgcgtggcg 600  
 gcaggtccc aggttgggg cccggtggaa gtccatctga caacccacc caggccagg 660  
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<210> 24  
 <211> 212  
 <212> PRT  
 <213> Homo sapiens

<400> 24  
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       20                      25                      30  
  
 Gly Phe Ser Ala Glu Asp Tyr Arg Glu Leu Glu Arg Leu Ala Leu Gln  
       35                      40                      45  
  
 Ala Glu Pro His Arg Ala Gly Arg Gln Trp Lys Phe Pro Gly Ser Phe  
       50                      55                      60

Tyr Phe Ala Ile Thr Val Ile Thr Thr Ile Glu Tyr Gly His Ala Ala  
65 70 75 80

Pro Gly Thr Asp Ser Gly Lys Val Phe Cys Met Phe Tyr Ala Leu Leu  
85 90 95

Gly Ile Pro Leu Thr Leu Val Thr Phe Gln Ser Leu Gly Glu Arg Leu  
100 105 110

Asn Ala Val Val Arg Arg Leu Leu Leu Ala Ala Lys Cys Cys Leu Gly  
115 120 125

Leu Arg Trp Thr Cys Val Ser Thr Glu Asn Leu Val Val Ala Gly Leu  
130 135 140

Leu Ala Cys Ala Ala Thr Leu Ala Leu Gly Ala Val Ala Phe Ser His  
145 150 155 160

Phe Glu Gly Trp Thr Phe Phe His Ala Tyr Tyr Tyr Cys Phe Ile Thr  
165 170 175

Leu Thr Thr Ile Gly Phe Gly Asp Asn Leu Gly Phe Ser Pro Pro Ser  
180 185 190

Ser Pro Gly Val Val Arg Gly Gly Gln Ala Pro Arg Leu Gly Ala Arg  
195 200 205

Trp Lys Ser Ile  
210

<210> 25

<211> 711

<212> DNA

<213> Homo sapiens

<400> 25

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gtgctgctg gaggaagaac ctggagaccg tggcaagctg gcccgggcat cagggaacta 300  
tgccaccgtt atctcccaca accctgagac caagaagacc cgtgtgaagc tgccctccgg 360  
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ccgaattgac aaacccatct tgaaggctgg ccgggcgtac cacaatatata aggcaaagag 480  
gaactgctgg ccacgagtag ggggtgtggc catgaatcct gtggagcatc cttttggagg 540  
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caaagtgggt ctcattgctg cccgccggac tggacgtctc cggggaacca agactgtgca 660  
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<210> 26  
 <211> 210  
 <212> PRT  
 <213> Homo sapiens

<400> 26  
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 Asp Phe Ala Glu Arg His Gly Tyr Ile Lys Gly Ile Val Lys Ala Gln  
 35 40 45  
 Leu Asn Ile Gly Asn Val Leu Pro Val Gly Thr Met Pro Glu Gly Thr  
 50 55 60  
 Ile Val Cys Cys Leu Glu Glu Lys Pro Gly Asp Arg Gly Lys Leu Ala  
 65 70 75 80  
 Arg Ala Ser Gly Asn Tyr Ala Thr Val Ile Ser His Asn Pro Glu Thr  
 85 90 95  
 Lys Lys Thr Arg Val Lys Leu Pro Ser Gly Ser Lys Lys Val Ile Ser  
 100 105 110  
 Ser Ala Asn Arg Ala Val Val Gly Val Val Ala Gly Gly Gly Arg Ile  
 115 120 125  
 Asp Lys Pro Ile Leu Lys Ala Gly Arg Ala Tyr His Lys Tyr Lys Ala  
 130 135 140  
 Lys Arg Asn Cys Trp Pro Arg Val Arg Gly Val Ala Met Asn Pro Val  
 145 150 155 160  
 Glu His Pro Phe Gly Gly Gly Asn His Gln His Ile Gly Lys Pro Ser  
 165 170 175  
 Thr Ile Arg Arg Asp Ala Pro Ala Gly Arg Lys Val Gly Leu Ile Ala  
 180 185 190  
 Ala Arg Arg Thr Gly Arg Leu Arg Gly Thr Lys Thr Val Gln Glu Lys  
 195 200 205

Glu Asn

210

<210> 27

<211> 1503

<212> DNA

<213> Homo sapiens

<400> 27

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ctacctgcgg aggagcggc tgctgcggga cctgcgcccc ttcccagcgc cccccacca 180
ctggttcctt gggcacaagc tgatggaaaa atacccatgt gctgttccct tgtgggttg 240
accctttacg atgttcttca gtgtccatga cccagactat gccaagattc tcctgaaaag 300
acaaggtaaa aaccaagagg ggtttctgcc ttttatttct caaggaaaag gactagcggc 360
tctagacgga cccaagtggg tccagcatcg tgcctacta actcctggat tccattttaa 420
catcctgaaa gcatacattg aggtgatggc tcattctgtg aaaatgatgc tgaacaaatg 480
ggaggaacac attgcccaca actcacgtct ggagctcttt caacatgtct ccctgatgac 540
cctggacagc atcatgaagt gtgccttcag ccaccagggc agcatccagt tggacaggtc 600
atcatacctg aaagcagtgt tcaaccttag caaaatctcc aaccagcgca tgaacaattt 660
tctacatcac aacgacctgg ttttcaaatt cagctctcaa ggccaaatct tttctaaatt 720
taaccaagaa cttcatcagc atctagagaa agtaatccag gaccggaagg agtctcttaa 780
ggataagcta aaacaagata ctactcagaa aaggcgctgg gattttctgg acatactttt 840
gagtgccaaa gtagaaaaca ccaaagattt ctctgaagca gatctccagg ctgaagtgaa 900
aacgttcattg tttgcaggac atgacaccac atccagtgc atctcctgga tcctttactg 960
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agg 1503
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<210> 28

<211> 494

<212> PRT

<213> Homo sapiens

<400> 28

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Gly Leu Leu Gln Gly Ala Ser Leu Leu Ser Leu Leu Leu Leu Leu  
 20 25 30  
 Lys Ala Ala Gln Pro Tyr Leu Arg Arg Gln Arg Leu Leu Arg Asp Leu  
 35 40 45  
 Arg Pro Phe Pro Ala Pro Pro Thr His Trp Phe Leu Gly His Lys Leu  
 50 55 60  
 Met Glu Lys Tyr Pro Cys Ala Val Pro Leu Trp Val Gly Pro Phe Thr  
 65 70 75 80  
 Met Phe Phe Ser Val His Asp Pro Asp Tyr Ala Lys Ile Leu Leu Lys  
 85 90 95  
 Arg Gln Gly Lys Asn Gln Glu Gly Phe Leu Pro Phe Ile Ser Gln Gly  
 100 105 110  
 Lys Gly Leu Ala Ala Leu Asp Gly Pro Lys Trp Phe Gln His Arg Arg  
 115 120 125  
 Leu Leu Thr Pro Gly Phe His Phe Asn Ile Leu Lys Ala Tyr Ile Glu  
 130 135 140  
 Val Met Ala His Ser Val Lys Met Met Leu Asn Lys Trp Glu Glu His  
 145 150 155 160  
 Ile Ala Gln Asn Ser Arg Leu Glu Leu Phe Gln His Val Ser Leu Met  
 165 170 175  
 Thr Leu Asp Ser Ile Met Lys Cys Ala Phe Ser His Gln Gly Ser Ile  
 180 185 190  
 Gln Leu Asp Arg Ser Ser Tyr Leu Lys Ala Val Phe Asn Leu Ser Lys  
 195 200 205  
 Ile Ser Asn Gln Arg Met Asn Asn Phe Leu His His Asn Asp Leu Val  
 210 215 220  
 Phe Lys Phe Ser Ser Gln Gly Gln Ile Phe Ser Lys Phe Asn Gln Glu  
 225 230 235 240  
 Leu His Gln His Leu Glu Lys Val Ile Gln Asp Arg Lys Glu Ser Leu  
 245 250 255  
 Lys Asp Lys Leu Lys Gln Asp Thr Thr Gln Lys Arg Arg Trp Asp Phe  
 260 265 270

Leu Asp Ile Leu Leu Ser Ala Lys Val Glu Asn Thr Lys Asp Phe Ser  
 275 280 285  
 Glu Ala Asp Leu Gln Ala Glu Val Lys Thr Phe Met Phe Ala Gly His  
 290 295 300  
 Asp Thr Thr Ser Ser Ala Ile Ser Trp Ile Leu Tyr Cys Leu Ala Lys  
 305 310 315 320  
 Tyr Pro Glu His Gln Gln Arg Cys Arg Asp Glu Ile Arg Glu Leu Leu  
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 Gly Asp Gly Ser Ser Ile Thr Trp His Leu Ser Gln Met Pro Tyr Thr  
 340 345 350  
 Thr Met Cys Ile Lys Glu Cys Leu Arg Leu Tyr Ala Pro Val Val Asn  
 355 360 365  
 Ile Ser Arg Leu Leu Asp Lys Pro Ile Thr Phe Pro Asp Gly Arg Ser  
 370 375 380  
 Leu Pro Ala Gly Ile Thr Val Val Leu Ser Ile Trp Gly Leu His His  
 385 390 395 400  
 Asn Pro Ala Val Trp Lys Asn Val Gln Val Phe Asp Pro Leu Arg Phe  
 405 410 415  
 Ser Gln Glu Asn Ser Asp Gln Arg His Pro Tyr Ala Tyr Leu Pro Phe  
 420 425 430  
 Ser Ala Gly Ser Arg Asn Cys Ile Gly Gln Glu Phe Ala Met Ile Glu  
 435 440 445  
 Leu Lys Val Thr Ile Ala Leu Ile Leu Leu His Phe Arg Val Thr Pro  
 450 455 460  
 Asp Pro Thr Arg Pro Leu Thr Phe Pro Asn His Phe Ile Leu Lys Pro  
 465 470 475 480  
 Lys Asn Gly Met Tyr Leu His Leu Lys Lys Leu Ser Glu Cys  
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<210> 29

<211> 1408

<212> DNA

<213> Homo sapiens

<400> 29

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gctacgtggc caccagtggt tgcgtggccg tctacagcct gtgcttcctg gccacagtgg 780
ccgtgggtgg cctgagtgtg atgggccaca cagggggcct gggctgcccc ttgaccggc 840
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atcctccagg ctccagccag cttctcctgc acagaagccc agcctggtcc agccaggagc 1260
tgaccactg gccaccctg agtccaagcc ggggtgggcag tggcacaaca gccctcagc 1320
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<210> 30

<211> 344

<212> PRT

<213> Homo sapiens

<400> 30

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Met Gly Ser Thr Met Glu Pro Pro Gly Gly Ala Tyr Leu His Leu Gly
  1              5              10              15

Ala Val Thr Ser Pro Val Cys Thr Ala Arg Val Leu Gln Leu Ala Phe
      20              25              30

Gly Cys Thr Thr Phe Ser Leu Val Ala His Arg Gly Gly Phe Ala Gly
      35              40              45

Val Gln Gly Thr Phe Cys Met Asp Ala Trp Gly Phe Cys Phe Ala Val
      50              55              60

Ser Ala Leu Val Val Ala Cys Glu Phe Thr Arg Leu His Gly Cys Leu
      65              70              75              80
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Arg Leu Ser Trp Gly Asn Phe Thr Ala Ala Phe Ala Met Leu Ala Thr  
 85 90 95  
 Leu Leu Cys Ala Thr Ala Ala Val Leu Tyr Pro Leu Tyr Phe Ala Arg  
 100 105 110  
 Arg Glu Cys Ser Pro Glu Pro Ala Gly Cys Ala Ala Arg Asp Phe Arg  
 115 120 125  
 Leu Ala Ala Ser Val Phe Ala Gly Leu Leu Phe Leu Ala Tyr Ala Val  
 130 135 140  
 Glu Val Ala Leu Thr Arg Ala Arg Pro Gly Gln Val Ser Ser Tyr Met  
 145 150 155 160  
 Ala Thr Val Ser Gly Leu Leu Lys Ile Val Gln Ala Phe Val Ala Cys  
 165 170 175  
 Ile Ile Phe Gly Ala Leu Val His Asp Ser Arg Tyr Gly Arg Tyr Val  
 180 185 190  
 Ala Thr Gln Trp Cys Val Ala Val Tyr Ser Leu Cys Phe Leu Ala Thr  
 195 200 205  
 Val Ala Val Val Ala Leu Ser Val Met Gly His Thr Gly Gly Leu Gly  
 210 215 220  
 Cys Pro Phe Asp Arg Leu Val Val Val Tyr Thr Phe Leu Ala Val Leu  
 225 230 235 240  
 Leu Tyr Leu Ser Ala Ala Val Ile Trp Pro Val Phe Cys Phe Asp Pro  
 245 250 255  
 Lys Tyr Gly Glu Pro Lys Arg Pro Pro Asn Cys Ala Arg Gly Ser Cys  
 260 265 270  
 Pro Trp Asp Thr Ser Trp Trp Trp Pro Ser Ser Pro Thr Ser Thr Cys  
 275 280 285  
 Ser Cys Thr Ser Leu Thr Ser Pro Thr Pro Ser Phe Ser Ser Ala Arg  
 290 295 300  
 Arg Ala Ser Val His Cys Gly His Leu Trp His Trp Glu Gly Ala Arg  
 305 310 315 320  
 Leu Arg Ala Ala Ala Gly His Arg Ile Trp Val Leu Leu Ala Ser Ala  
 325 330 335

Gln Gly Ser Ser Cys Arg Asn Ser  
340

<210> 31  
<211> 1113  
<212> DNA  
<213> Homo sapiens

<400> 31  
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gtgagccagg tcgctgttgt cctgctgatg ttccccaagg agaaagaggc cttcttggca 180  
ctagctcagc tgctgaccag caaaaacctg ccagacactg tagatggaca gctgcctatg 240  
gggacctaca gccggggccag ccagggtggct ccagagacga catcaagcaa ggtggaccgg 300  
ggtgtctcca cagtgtgtgg gaagcctaag gtggtgggga agatctatgg tggccgggac 360  
gcagcagctg gccagtggcc atggcaggcc agcctgctct actggggctc gcacctctgt 420  
ggagctgtcc tcatcgactc ctgctggctg gtatcaacta cccactgctt taaatcccag 480  
gccccgaaga actatcaggt tctgttggga aacatccaac tgtatcatca aaccagcac 540  
accagaaga tgtctgtgca ccggatcatc acccatccag actttgagaa gctccacccc 600  
tttgggagtg acattgccat gttgcagctg cacctgccta tgaacttcac ttcctacatt 660  
gtccctgtct gcctcccatc ccgggacatg cagctgcca gtaacgtgtc ctgttgata 720  
accggtggg gaatgctcac cgaagacctt tggtctcagg gcgattctgg ggggacctta 780  
gtctgtacc tccccagtgc ctgggtcctg gtggggtgg ccagctgggg cctggactgc 840  
cggcatcctg cctaccccag catcttcacc agggtcacct acttcatcaa ctggattgac 900  
aaaatcatga ggctcactcc tctttctgac ccgcgctgg ctctcacac ctgctctcca 960  
cccaagctc tgagggtgct tggcctgcct gggcctgcg cagcccttgt gctgccacag 1020  
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<210> 32  
<211> 356  
<212> PRT  
<213> Homo sapiens

<400> 32  
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Arg Glu Lys Ala Lys Arg Glu Val Leu His Thr Phe Lys Gln Pro Asp  
20 25 30  
Leu Asp Met Gly Tyr Cys Gln Gly Val Ser Gln Val Ala Val Val Leu  
35 40 45  
Leu Met Phe Pro Lys Glu Lys Glu Ala Phe Leu Ala Leu Ala Gln Leu  
50 55 60

Leu Thr Ser Lys Asn Leu Pro Asp Thr Val Asp Gly Gln Leu Pro Met  
 65 70 75 80

Gly Pro His Ser Arg Ala Ser Gln Val Ala Pro Glu Thr Thr Ser Ser  
 85 90 95

Lys Val Asp Arg Gly Val Ser Thr Val Cys Gly Lys Pro Lys Val Val  
 100 105 110

Gly Lys Ile Tyr Gly Gly Arg Asp Ala Ala Ala Gly Gln Trp Pro Trp  
 115 120 125

Gln Ala Ser Leu Leu Tyr Trp Gly Ser His Leu Cys Gly Ala Val Leu  
 130 135 140

Ile Asp Ser Cys Trp Leu Val Ser Thr Thr His Cys Phe Lys Ser Gln  
 145 150 155 160

Ala Pro Lys Asn Tyr Gln Val Leu Leu Gly Asn Ile Gln Leu Tyr His  
 165 170 175

Gln Thr Gln His Thr Gln Lys Met Ser Val His Arg Ile Ile Thr His  
 180 185 190

Pro Asp Phe Glu Lys Leu His Pro Phe Gly Ser Asp Ile Ala Met Leu  
 195 200 205

Gln Leu His Leu Pro Met Asn Phe Thr Ser Tyr Ile Val Pro Val Cys  
 210 215 220

Leu Pro Ser Arg Asp Met Gln Leu Pro Ser Asn Val Ser Cys Trp Ile  
 225 230 235 240

Thr Gly Trp Gly Met Leu Thr Glu Asp Leu Cys Ser Gln Gly Asp Ser  
 245 250 255

Gly Gly Pro Leu Val Cys Tyr Leu Pro Ser Ala Trp Val Leu Val Gly  
 260 265 270

Leu Ala Ser Trp Gly Leu Asp Cys Arg His Pro Ala Tyr Pro Ser Ile  
 275 280 285

Phe Thr Arg Val Thr Tyr Phe Ile Asn Trp Ile Asp Lys Ile Met Arg  
 290 295 300

Leu Thr Pro Leu Ser Asp Pro Ala Leu Ala Pro His Thr Cys Ser Pro  
 305 310 315 320

Pro Lys Pro Leu Arg Ala Ala Gly Leu Pro Gly Pro Cys Ala Ala Leu  
 325 330 335

Val Leu Pro Gln Thr Trp Leu Leu Leu Pro Leu Thr Leu Arg Ala Pro  
 340 345 350

Trp Gln Thr Leu  
 355

<210> 33  
 <211> 2393  
 <212> DNA  
 <213> Homo sapiens

<400> 33  
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 agttgtcct ggtctccgc ctctccagg cgaccggag gtagcatttc ccaggaggca 120  
 cgggtccccc caggggatg ggcacagcca cgccagatg acgagaagac caagaaagca 180  
 gaggaaatgg ccctgagcct caccgagca gtggcgggcg gggatgaaca ggtggcaatg 240  
 aagtgtgcca tctggctggc agagcaacgg gtgccctga gtgtgcaact gaagcctgag 300  
 gtctcccaa cgcaggacat caggctgtgg gtgagcgtgg aggatgctca gatgcacacc 360  
 gtcaccatct ggctcacagt gcgccctgat atgaccgtgg cgtctctcaa ggacatggtt 420  
 tttctggact atggcttccc accagtcttg cagcagtggg tgattgggca gcggctggca 480  
 cgagaccagg agaccctgca ctcccatggg gtgcggcaga atggggacag tgccctacctc 540  
 tatctgctgt cagcccga cacctccctc aaccctcagg agctgcagcg ggagcggcag 600  
 ctgcggatgc tgggaagatct gggcttcaag gacctcacgc tgcagccgcg gggccctctg 660  
 gagccaggcc ccccaaagcc cggggtcccc caggaacccg gacgggggca gccagatgca 720  
 gtgcctgagc cccaccggt gggctggcag tgccccgggt gcaccttcat caacaagccc 780  
 acgcgccctg gctgtgagat gtgctgccgg gcgcgccccg aggcctacca ggtccccgcc 840  
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 cagtaccagc agcggaagca gcagcagcag gaggggaaact acctgcagca cgtccagctg 960  
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 gattaccagc gatttctaga cctgggcac tccattgctg aaaaccgcag tgccttcagc 1260  
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 cagtgccaga tcgtggtaca gaagaaggac ggctgcgact ggatccgctg caccgtctgc 1560  
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gcttgccggc cagacttctc tcccctgcgg ctcccacctc tgcctgaccc cagccttaaa 1920  
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accacaacac tcatctgtca aacaccaagc actctcagcc tccccgcctt cagctgtcag 2040  
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ccggctctgc gtctccctct ctgcaacctg tgtaagctat tataattaaa atggttttcc 2220  
gggaagggat gagtgtgatg tccttgagag gaaatgaatg ccctggcctg ggactctaca 2280  
cacaggcagg atcctgaggt ctctgggaac tgcatacagaa agttgacttg tcagtccatc 2340  
tgtggtagaa tgaggctgtg actgagcact gggacctttc taccagatgt ggc 2393

<210> 34  
<211> 510  
<212> PRT  
<213> Homo sapiens

<400> 34  
Met Asp Glu Lys Thr Lys Lys Ala Glu Glu Met Ala Leu Ser Leu Thr  
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Arg Ala Val Ala Gly Gly Asp Glu Gln Val Ala Met Lys Cys Ala Ile  
20 25 30  
Trp Leu Ala Glu Gln Arg Val Pro Leu Ser Val Gln Leu Lys Pro Glu  
35 40 45  
Val Ser Pro Thr Gln Asp Ile Arg Leu Trp Val Ser Val Glu Asp Ala  
50 55 60  
Gln Met His Thr Val Thr Ile Trp Leu Thr Val Arg Pro Asp Met Thr  
65 70 75 80  
Val Ala Ser Leu Lys Asp Met Val Phe Leu Asp Tyr Gly Phe Pro Pro  
85 90 95  
Val Leu Gln Gln Trp Val Ile Gly Gln Arg Leu Ala Arg Asp Gln Glu  
100 105 110  
Thr Leu His Ser His Gly Val Arg Gln Asn Gly Asp Ser Ala Tyr Leu  
115 120 125  
Tyr Leu Leu Ser Ala Arg Asn Thr Ser Leu Asn Pro Gln Glu Leu Gln  
130 135 140  
Arg Glu Arg Gln Leu Arg Met Leu Glu Asp Leu Gly Phe Lys Asp Leu  
145 150 155 160  
Thr Leu Gln Pro Arg Gly Pro Leu Glu Pro Gly Pro Pro Lys Pro Gly



165 170 175  
 Val Pro Gln Glu Pro Gly Arg Gly Gln Pro Asp Ala Val Pro Glu Pro  
 180 185 190  
 Pro Pro Val Gly Trp Gln Cys Pro Gly Cys Thr Phe Ile Asn Lys Pro  
 195 200 205  
 Thr Arg Pro Gly Cys Glu Met Cys Cys Arg Ala Arg Pro Glu Ala Tyr  
 210 215 220  
 Gln Val Pro Ala Ser Tyr Gln Pro Asp Glu Glu Glu Arg Ala Arg Leu  
 225 230 235 240  
 Ala Gly Glu Glu Glu Ala Leu Arg Gln Tyr Gln Gln Arg Lys Gln Gln  
 245 250 255  
 Gln Gln Glu Gly Asn Tyr Leu Gln His Val Gln Leu Asp Gln Arg Ser  
 260 265 270  
 Leu Val Leu Asn Thr Glu Pro Ala Glu Cys Pro Val Cys Tyr Ser Val  
 275 280 285  
 Leu Ala Pro Gly Glu Ala Val Val Leu Arg Glu Cys Leu His Thr Phe  
 290 295 300  
 Cys Arg Glu Cys Leu Gln Gly Thr Ile Arg Asn Ser Gln Glu Ala Glu  
 305 310 315 320  
 Val Ser Cys Pro Phe Ile Asp Asn Thr Tyr Ser Cys Ser Gly Lys Leu  
 325 330 335  
 Leu Glu Arg Glu Ile Lys Ala Leu Leu Thr Pro Glu Asp Tyr Gln Arg  
 340 345 350  
 Phe Leu Asp Leu Gly Ile Ser Ile Ala Glu Asn Arg Ser Ala Phe Ser  
 355 360 365  
 Tyr His Cys Lys Thr Pro Asp Cys Lys Gly Trp Cys Phe Phe Glu Asp  
 370 375 380  
 Asp Val Asn Glu Phe Thr Cys Pro Val Cys Phe His Val Asn Cys Leu  
 385 390 395 400  
 Leu Cys Lys Ala Ile His Glu Gln Met Asn Cys Lys Glu Tyr Gln Glu  
 405 410 415  
 Asp Leu Ala Leu Arg Ala Gln Asn Asp Val Ala Ala Arg Gln Thr Thr

420	425	430
Glu Met Leu Lys Val Met Leu Gln Gln Gly Glu Ala Met Arg Cys Pro		
435	440	445
Gln Cys Gln Ile Val Val Gln Lys Lys Asp Gly Cys Asp Trp Ile Arg		
450	455	460
Cys Thr Val Cys His Thr Glu Ile Cys Trp Val Thr Lys Gly Pro Arg		
465	470	475
Trp Gly Pro Gly Gly Pro Gly Asp Thr Ser Gly Gly Cys Arg Cys Arg		
485	490	495
Val Asn Gly Ile Pro Cys His Pro Ser Cys Gln Asn Cys His		
500	505	510

<210> 35  
 <211> 2372  
 <212> DNA  
 <213> Homo sapiens

<400> 35  
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 gcacagccac gccagatgga cgagaagacc aagaaagcag aggaaatggc cctgagcctc 180  
 acccgagcag tggcgggcgg ggatgaacag gtggcaatga agtgtgccat ctggctggca 240  
 gagcaacggg tgcccccgag tgtgcaactg aagcctgagg tctccccaac gcaggacatc 300  
 aggctgtggg tgagcgtgga ggatgctcag atgcacaccg tcaccatctg gctcacagtg 360  
 cgccctgata tgaccgtggc gtctctcaag gacatggttt ttctggacta tggcttccca 420  
 ccagtcttgc agcagtgggt gattgggcag cggtggcac gagaccagga gaccctgcac 480  
 tcccatgggg tgcggcagaa tggggacagt gcctacctct atctgctgtc agcccgcaac 540  
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 ggggtcccc aggaaccgg acgggggcag ccagatgcag tgctgagcc cccaccggtg 720  
 ggctggcagt gccccgggtg caccttcac aacaagccca cgcggccttg ctgtgagatg 780  
 tgctgccggg cgcgccccga ggcctaccag gtccccgcct cataccagcc cgacgaggag 840  
 gagcgagcgc gcctggcggg cgaggaggag gcgctgcgtc agtaccagca gcggaagcag 900  
 cagcagcagg aggggaacta cctgcagcac gtccagctgg accagaggag cctggtgctg 960  
 aacacggagc ccgccgagt ccccggtgtc tactcggtgc tggcgcccg cgaggccgtg 1020  
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 ctgggcatct ccattgctga aaaccgcagt gccttcagct accattgcaa gacccagat 1260  
 tgcaagggat ggtgcttctt tgaggatgat gtcaatgagt tcacctgccc tgtgtgtttc 1320  
 cagctcaact gctgctctg caaggccatc catgagcaga tgaactgcaa ggagtatcag 1380  
 gaggacctgg ccctgcgggc tcagaacgat gtggctgccc ggcagacgac agagatgctg 1440

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accaagggcc cagctgggg cctggggggc ccaggagaca ccagcggggg ctgccgctgt 1620
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2372

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<210> 36

<211> 555

<212> PRT

<213> Homo sapiens

<400> 36

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Met Gly Ser Gly Arg Val Gly Gly His Thr Ala Trp Leu Ser Cys Ser
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```

```

Trp Ser Pro Ala Ser Pro Arg Arg Pro Gly Gly Ser Ile Ser Gln Glu
          20              25              30

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```

Ala Arg Ser Pro Pro Gly Gly Trp Ala Gln Pro Arg Gln Met Asp Glu
          35              40              45

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```

Lys Thr Lys Lys Ala Glu Glu Met Ala Leu Ser Leu Thr Arg Ala Val
          50              55              60

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Ala Gly Gly Asp Glu Gln Val Ala Met Lys Cys Ala Ile Trp Leu Ala
          65              70              75              80

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```

Glu Gln Arg Val Pro Pro Ser Val Gln Leu Lys Pro Glu Val Ser Pro
          85              90              95

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Thr Gln Asp Ile Arg Leu Trp Val Ser Val Glu Asp Ala Gln Met His
          100             105             110

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Thr Val Thr Ile Trp Leu Thr Val Arg Pro Asp Met Thr Val Ala Ser
          115             120             125

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Leu Lys Asp Met Val Phe Leu Asp Tyr Gly Phe Pro Pro Val Leu Gln  
 130 135 140

Gln Trp Val Ile Gly Gln Arg Leu Ala Arg Asp Gln Glu Thr Leu His  
 145 150 155 160

Ser His Gly Val Arg Gln Asn Gly Asp Ser Ala Tyr Leu Tyr Leu Leu  
 165 170 175

Ser Ala Arg Asn Thr Ser Leu Asn Pro Gln Glu Leu Gln Arg Glu Arg  
 180 185 190

Gln Leu Arg Met Leu Glu Asp Leu Gly Phe Lys Asp Leu Thr Leu Gln  
 195 200 205

Pro Arg Gly Pro Leu Glu Pro Gly Pro Pro Lys Pro Gly Val Pro Gln  
 210 215 220

Glu Pro Gly Arg Gly Gln Pro Asp Ala Val Pro Glu Pro Pro Pro Val  
 225 230 235 240

Gly Trp Gln Cys Pro Gly Cys Thr Phe Ile Asn Lys Pro Thr Arg Pro  
 245 250 255

Gly Cys Glu Met Cys Cys Arg Ala Arg Pro Glu Ala Tyr Gln Val Pro  
 260 265 270

Ala Ser Tyr Gln Pro Asp Glu Glu Glu Arg Ala Arg Leu Ala Gly Glu  
 275 280 285

Glu Glu Ala Leu Arg Gln Tyr Gln Gln Arg Lys Gln Gln Gln Gln Glu  
 290 295 300

Gly Asn Tyr Leu Gln His Val Gln Leu Asp Gln Arg Ser Leu Val Leu  
 305 310 315 320

Asn Thr Glu Pro Ala Glu Cys Pro Val Cys Tyr Ser Val Leu Ala Pro  
 325 330 335

Gly Glu Ala Val Val Leu Arg Glu Cys Leu His Thr Phe Cys Arg Glu  
 340 345 350

Cys Leu Gln Gly Thr Ile Arg Asn Ser Gln Glu Ala Glu Val Ser Cys  
 355 360 365

Pro Phe Ile Asp Asn Thr Tyr Ser Cys Ser Gly Lys Leu Leu Glu Arg  
 370 375 380

Glu Ile Lys Ala Leu Leu Thr Pro Glu Asp Tyr Gln Arg Phe Leu Asp  
 385 390 395 400

Leu Gly Ile Ser Ile Ala Glu Asn Arg Ser Ala Phe Ser Tyr His Cys  
 405 410 415

Lys Thr Pro Asp Cys Lys Gly Trp Cys Phe Phe Glu Asp Asp Val Asn  
 420 425 430

Glu Phe Thr Cys Pro Val Cys Phe His Val Asn Cys Leu Leu Cys Lys  
 435 440 445

Ala Ile His Glu Gln Met Asn Cys Lys Glu Tyr Gln Glu Asp Leu Ala  
 450 455 460

Leu Arg Ala Gln Asn Asp Val Ala Ala Arg Gln Thr Thr Glu Met Leu  
 465 470 475 480

Lys Val Met Leu Gln Gln Gly Glu Ala Met Arg Cys Pro Gln Cys Gln  
 485 490 495

Ile Val Val Gln Lys Lys Asp Gly Cys Asp Trp Ile Arg Cys Thr Val  
 500 505 510

Cys His Thr Glu Ile Cys Trp Val Thr Lys Gly Pro Arg Trp Gly Pro  
 515 520 525

Gly Gly Pro Gly Asp Thr Ser Gly Gly Cys Arg Cys Arg Val Asn Gly  
 530 535 540

Ile Pro Cys His Pro Ser Cys Gln Asn Cys His  
 545 550 555

<210> 37

<211> 1233

<212> DNA

<213> Homo sapiens

<400> 37

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 aggggttaagg aaaaccttcc agtctggaca gtgactggag agctccaagg aaagcccctc 180  
 ggtaaccacag cgcgtggcac catgaacca gagagcagta tctttattga ggattacctt 240  
 aagtatttcc aggaccaagt gagcagagag aatctgctac aactgctgac tgatgatgaa 300  
 gcctggaatg gattcgtggc tgctgctgaa ctgccaggg atgaggcaga tgagctccgt 360  
 aaagctctga acaagcttgc aagtcacatg gtcataaagg acaaaaaccg ccacgataaa 420  
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gatcacataa ggaagctccg tgcccttgca gaggagggtg agcagggtcca cagaggcacc 540  
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cctcagttag gagcgtatgc cccacccccg catgtcattg ggcgaaatctc agctgaaggc 960  
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<210> 38

<211> 401

<212> PRT

<213> Homo sapiens

<400> 38

Met His Thr Ala Gln Asn Ser Trp Ile Leu Leu Ser Leu Cys Gln Arg  
1 5 10 15

Lys Ile Pro Trp Thr Arg Gly Pro Cys Leu Gly Val Arg Val Arg Glu  
20 25 30

Glu Glu Ala Gly Thr Arg Val Lys Glu Asn Leu Pro Val Trp Thr Val  
35 40 45

Thr Gly Glu Leu Gln Gly Lys Pro Leu Gly Asn Pro Ala Ala Gly Thr  
50 55 60

Met Asn Pro Glu Ser Ser Ile Phe Ile Glu Asp Tyr Leu Lys Tyr Phe  
65 70 75 80

Gln Asp Gln Val Ser Arg Glu Asn Leu Leu Gln Leu Leu Thr Asp Asp  
85 90 95

Glu Ala Trp Asn Gly Phe Val Ala Ala Ala Glu Leu Pro Arg Asp Glu  
100 105 110

Ala Asp Glu Leu Arg Lys Ala Leu Asn Lys Leu Ala Ser His Met Val  
115 120 125

Met Lys Asp Lys Asn Arg His Asp Lys Asp Gln Gln His Arg Gln Trp  
130 135 140

Phe Leu Lys Glu Phe Pro Arg Leu Lys Arg Glu Leu Glu Asp His Ile  
145 150 155 160  
Arg Lys Leu Arg Ala Leu Ala Glu Glu Val Glu Gln Val His Arg Gly  
165 170 175  
Thr Thr Ile Ala Asn Val Val Ser Asn Ser Val Gly Thr Thr Ser Gly  
180 185 190  
Ile Leu Thr Leu Leu Gly Leu Gly Leu Ala Pro Phe Thr Glu Gly Ile  
195 200 205  
Ser Phe Val Leu Leu Asp Thr Gly Met Gly Leu Gly Ala Ala Ala Ala  
210 215 220  
Val Ala Gly Ile Thr Cys Ser Val Val Glu Leu Val Asn Lys Leu Arg  
225 230 235 240  
Ala Arg Ala Gln Ala Arg Asn Leu Asp Gln Ser Gly Thr Asn Val Ala  
245 250 255  
Lys Val Met Lys Glu Phe Val Gly Gly Asn Thr Pro Asn Val Leu Thr  
260 265 270  
Leu Val Asp Asn Trp Tyr Gln Val Thr Gln Gly Ile Gly Arg Asn Ile  
275 280 285  
Arg Ala Ile Arg Arg Ala Arg Ala Asn Pro Gln Leu Gly Ala Tyr Ala  
290 295 300  
Pro Pro Pro His Val Ile Gly Arg Ile Ser Ala Glu Gly Gly Glu Gln  
305 310 315 320  
Val Glu Arg Val Val Glu Gly Pro Ala Gln Ala Met Ser Arg Gly Thr  
325 330 335  
Met Ile Val Gly Ala Ala Thr Gly Gly Ile Leu Leu Leu Leu Asp Val  
340 345 350  
Val Ser Leu Ala Tyr Glu Ser Lys His Leu Leu Glu Gly Ala Lys Ser  
355 360 365  
Glu Ser Ala Glu Glu Leu Lys Lys Arg Ala Gln Glu Leu Glu Gly Lys  
370 375 380  
Leu Asn Phe Leu Thr Lys Ile His Glu Met Leu Gln Pro Gly Gln Asp  
385 390 395 400

Gln

<210> 39

<211> 1232

<212> DNA

<213> Homo sapiens

<400> 39

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gggttaagga aaaccttcca gtctggacag tgactggaga gctccaagga aagcccctcg 180
gtaaccacagc cgctggcacc atgaaccacag agagcagtat ctttattgag gattacctta 240
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cctggaatgg attcgtggct gctgctgaac tgcccaggga tgaggcagat gagctccgta 360
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accagcagca caggcagtgg tttttgaaag agtttcctcg gttgaaaagg gagcttgagg 480
atcacataag gaagctccgt gcccttgtag aggaggttga gcagggtccac agaggcacca 540
ccattgccaa tgtggtgtcc aactctgttg gcactacctc tggcatcctg accctcctcg 600
gcctgggtct ggcacccttc acagaaggaa tcagttttgt gctcttggac actggcatgg 660
gtctgggagc agcagctgct gtggctggga ttacctgcag tgtggtagaa ctagtaaaca 720
aattgcgggc acgagcccaa gcccgcaact tggaccaaag cggcaccaat gtagcaaagg 780
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<210> 40

<211> 401

<212> PRT

<213> Homo sapiens

<400> 40

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Met His Ile Ala Gln Asn Ser Trp Ile Leu Leu Ser Leu Cys Gln Arg
  1                      5                      10                      15

Lys Ile Pro Trp Thr Arg Gly Pro Cys Leu Gly Val Arg Val Arg Glu
                      20                      25                      30

Glu Glu Ala Gly Thr Arg Val Lys Glu Asn Leu Pro Val Trp Thr Val
                      35                      40                      45
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Thr Gly Glu Leu Gln Gly Lys Pro Leu Gly Asn Pro Ala Ala Gly Thr  
 50 55 60

Met Asn Pro Glu Ser Ser Ile Phe Ile Glu Asp Tyr Leu Lys Tyr Phe  
 65 70 75 80

Gln Asp Gln Val Ser Arg Glu Asn Leu Leu Gln Leu Leu Thr Asp Asp  
 85 90 95

Glu Ala Trp Asn Gly Phe Val Ala Ala Ala Glu Leu Pro Arg Asp Glu  
 100 105 110

Ala Asp Glu Leu Arg Lys Ala Leu Asn Lys Leu Ala Ser His Met Val  
 115 120 125

Met Lys Asp Lys Asn Arg His Asp Lys Asp Gln Gln His Arg Gln Trp  
 130 135 140

Phe Leu Lys Glu Phe Pro Arg Leu Lys Arg Glu Leu Glu Asp His Ile  
 145 150 155 160

Arg Lys Leu Arg Ala Leu Ala Glu Glu Val Glu Gln Val His Arg Gly  
 165 170 175

Thr Thr Ile Ala Asn Val Val Ser Asn Ser Val Gly Thr Thr Ser Gly  
 180 185 190

Ile Leu Thr Leu Leu Gly Leu Gly Leu Ala Pro Phe Thr Glu Gly Ile  
 195 200 205

Ser Phe Val Leu Leu Asp Thr Gly Met Gly Leu Gly Ala Ala Ala Ala  
 210 215 220

Val Ala Gly Ile Thr Cys Ser Val Val Glu Leu Val Asn Lys Leu Arg  
 225 230 235 240

Ala Arg Ala Gln Ala Arg Asn Leu Asp Gln Ser Gly Thr Asn Val Ala  
 245 250 255

Lys Val Met Lys Glu Phe Val Gly Gly Asn Thr Pro Asn Val Leu Thr  
 260 265 270

Leu Val Asp Asn Trp Tyr Gln Val Thr Gln Gly Ile Gly Arg Asn Ile  
 275 280 285

Arg Ala Ile Arg Arg Ala Arg Ala Asn Pro Gln Leu Gly Ala Tyr Ala  
 290 295 300

Pro Pro Pro His Val Ile Gly Arg Ile Ser Ala Glu Gly Gly Glu Gln  
 305 310 315 320

Val Glu Arg Val Val Glu Gly Pro Ala Gln Ala Met Ser Arg Gly Thr  
 325 330 335

Met Ile Val Gly Ala Ala Thr Gly Gly Ile Leu Leu Leu Leu Asp Val  
 340 345 350

Val Ser Leu Ala Tyr Glu Ser Lys His Leu Leu Glu Gly Ala Lys Ser  
 355 360 365

Glu Ser Ala Glu Glu Leu Lys Lys Arg Ala Gln Glu Leu Glu Gly Lys  
 370 375 380

Leu Asn Phe Leu Thr Lys Ile His Glu Met Leu Gln Pro Gly Gln Asp  
 385 390 395 400

Gln

<210> 41

<211> 1351

<212> DNA

<213> Homo sapiens

<400> 41

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 tgatgccacc catcagggcc atggccaggg tcaccaagag accataaatc tggaactttc 180  
 cctgtgttct tgcgggtccag tccccgttga aaccttgaaa gtcaaaggaa tggacaagcc 240  
 cttcttttcc atagacttca aggttgccgg aggcgctgt cacagcacc acgatgccgc 300  
 ctatgatgcc aggaatgcc tgcagattgt taatgccaca tgtgtcctgg atgtgcagcc 360  
 gggactccag gaatggggc aggtatacaa aaccagggt ggagatgat cgcagacga 420  
 agccgatgat gagggcacc taaggcatga gcatcatctc agcagcggta cccacggcca 480  
 cccctcctgc gagcgtggca ttctggatgt gcaccatgtc cagcttgccc ttcttggtga 540  
 gggcactgga tattgccacc gaggttaagca cgcaggctgc caaggagcag taggtgttga 600  
 tggcggctcg gtgctggctg tccccatggt aggatatggc tgagttgaag ctgggccagt 660  
 acatccacag gaagaggggt ccaatcatgg caaagaggtc cgactggtac acagaattct 720  
 gtctctcctt gctctgctct aggttgctgc ggtagaggat cgggtcact gtgagcccaa 780  
 agtaggcgcc aaatgtgtgg atggcatgg agcctcctgc atccttcacc tttagcaggt 840  
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 gctgaatggg gctgacttta ccagaactg ccccaaaggc cacgcagaca gaggccacgc 960  
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cgctcaagtt cttgtgcgtc ctctctgacc accagtgggc gtcggcctcg aagtcgtagc 1260  
gcacgaacac cccgaagaga atcaccataa tcacctgcag gagcaggcag gtgagcggca 1320  
gccgccagcg gaggttggtg ttccaggcca t 1351

<210> 42

<211> 445

<212> PRT

<213> Homo sapiens

<400> 42

Met Ala Trp Asn Thr Asn Leu Arg Trp Arg Leu Pro Leu Thr Cys Leu  
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Leu Leu Gln Val Ile Met Val Ile Leu Phe Gly Val Phe Val Arg Tyr  
20 25 30

Asp Phe Glu Ala Asp Ala His Trp Trp Ser Glu Arg Thr His Lys Asn  
35 40 45

Leu Ser Asp Met Glu Asn Glu Phe Tyr Tyr Arg Tyr Pro Ser Phe Gln  
50 55 60

Asp Val His Val Met Val Phe Val Gly Phe Gly Phe Leu Met Thr Phe  
65 70 75 80

Leu Gln Arg Tyr Gly Phe Ser Ala Val Gly Phe Asn Phe Leu Leu Ala  
85 90 95

Ala Phe Gly Ile Gln Trp Ala Leu Leu Met Gln Gly Trp Phe His Phe  
100 105 110

Leu Gln Asp Arg Tyr Ile Val Val Gly Val Glu Asn Leu Ile Asn Ala  
115 120 125

Asp Phe Cys Val Ala Ser Val Cys Val Ala Phe Gly Ala Val Leu Gly  
130 135 140

Lys Val Ser Pro Ile Gln Leu Leu Ile Met Thr Phe Phe Gln Val Thr  
145 150 155 160

Leu Phe Ala Val Asn Glu Phe Ile Leu Leu Asn Leu Leu Lys Val Lys  
165 170 175

Asp Ala Gly Gly Ser Met Thr Ile His Thr Phe Gly Ala Tyr Phe Gly  
180 185 190

Leu Thr Val Thr Arg Ile Leu Tyr Arg Arg Asn Leu Glu Gln Ser Lys

195	200	205
Glu Arg Gln Asn Ser Val Tyr Gln Ser Asp Leu Phe Ala Met Ile Gly		
210	215	220
Thr Leu Phe Leu Trp Met Tyr Trp Pro Ser Phe Asn Ser Ala Ile Ser		
225	230	235 240
Tyr His Gly Asp Ser Gln His Arg Ala Ala Ile Asn Thr Tyr Cys Ser		
245	250	255
Leu Ala Ala Cys Val Leu Thr Ser Val Ala Ile Ser Ser Ala Leu His		
260	265	270
Lys Lys Gly Lys Leu Asp Met Val His Ile Gln Asn Ala Thr Leu Ala		
275	280	285
Gly Gly Val Ala Val Gly Thr Ala Ala Glu Met Met Leu Met Pro Tyr		
290	295	300
Gly Ala Leu Ile Ile Gly Phe Val Cys Gly Ile Ile Ser Thr Leu Gly		
305	310	315 320
Phe Val Tyr Leu Thr Pro Phe Leu Glu Ser Arg Leu His Ile Gln Asp		
325	330	335
Thr Cys Gly Ile Asn Asn Leu His Gly Ile Pro Gly Ile Ile Gly Gly		
340	345	350
Ile Val Gly Ala Val Thr Ala Ala Ser Ala Ser Leu Glu Val Tyr Gly		
355	360	365
Lys Glu Gly Leu Val His Ser Phe Asp Phe Gln Gly Phe Asn Gly Asp		
370	375	380
Trp Thr Ala Arg Thr Gln Gly Lys Phe Gln Ile Tyr Gly Leu Leu Val		
385	390	395 400
Thr Leu Ala Met Ala Leu Met Gly Gly Ile Ile Val Gly Leu Ile Leu		
405	410	415
Arg Leu Pro Phe Trp Gly Gln Pro Ser Asp Glu Asn Cys Phe Glu Asp		
420	425	430
Ala Val Tyr Trp Glu Val Ser Ser Arg Asp Leu Ala Pro		
435	440	445

<210> 43  
 <211> 1763  
 <212> DNA  
 <213> Homo sapiens

<400> 43  
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 gaactctcga aagggaacga actgcacaat atcgcgggct gcctcctccc ccgtgtggga 180  
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 gcccacgatg atgatggaca tgggcagctt ggaagcctgc accacggcat gccgtgtctc 300  
 ctccatgtca ctgatgacct cgtccgtgat gatgaggagg atgaagtact gcgtggccgt 360  
 ccgctgttgt gtggcctggg ccgcaaaccg ggccacgtgg ttgacgatgg gggagaaatt 420  
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 cacacctgag cagaaggggt tgggtggggt gaagttgatg gcaaactcat gggagacctt 540  
 ccagtctggg ggtaactggg ccccgaatcc cagagctgga aacatcttat cactgtcgtg 600  
 gtcctgaatg atctgcccac cagcccagat ggccgacaga tattcggttg tgcccatagg 660  
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 gtttatcttg caggatcgca ggatgatgat gcccaggttt ttatagttct tcttcttct 840  
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 ctgtgacact gaggtctgga actcgcgat gaagtcagtg ccccgatcat tgtcatagtc 960  
 gtagcacatg acctggatgg gcttctccat gtcccatca cacagggaca ccaagggcac 1020  
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 ctccgagcca cccggggtat cct 1763

<210> 44  
 <211> 549  
 <212> PRT  
 <213> Homo sapiens

<400> 44  
 Met Ala His Ile Pro Ser Gly Gly Ala Pro Ala Ala Gly Ala Ala Pro  
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 Met Gly Pro Gln Tyr Cys Val Cys Lys Val Glu Leu Ser Val Ser Gly

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35	40	45
Val Leu Phe Thr Glu Asn Asn Gly Arg Trp Ile Glu Tyr Asp Arg Thr		
50	55	60
Glu Thr Ala Ile Asn Asn Leu Asn Pro Ala Phe Ser Lys Lys Phe Val		
65	70	75
		80
Leu Asp Tyr His Phe Glu Glu Val Gln Lys Leu Lys Phe Ala Leu Phe		
85	90	95
Asp Gln Asp Lys Ser Ser Met Arg Leu Asp Glu His Asp Phe Leu Gly		
100	105	110
Gln Phe Ser Cys Ser Leu Gly Thr Ile Val Ser Ser Lys Lys Ile Thr		
115	120	125
Arg Pro Leu Leu Leu Leu Asn Asp Lys Pro Ala Gly Lys Gly Leu Ile		
130	135	140
Thr Ile Ala Ala Gln Glu Leu Ser Asp Asn Arg Val Ile Thr Leu Ser		
145	150	155
		160
Leu Ala Gly Arg Arg Leu Asp Lys Lys Asp Leu Phe Gly Lys Ser Asp		
165	170	175
Pro Phe Leu Glu Phe Tyr Lys Pro Gly Asp Asp Gly Lys Trp Met Leu		
180	185	190
Val His Arg Thr Glu Val Ile Lys Tyr Thr Leu Asp Pro Val Trp Lys		
195	200	205
Pro Phe Thr Val Pro Leu Val Ser Leu Cys Asp Gly Asp Met Glu Lys		
210	215	220
Pro Ile Gln Val Met Cys Tyr Asp Tyr Asp Asn Asp Gly Gly His Asp		
225	230	235
		240
Phe Ile Gly Glu Phe Gln Thr Ser Val Ser Gln Met Cys Glu Ala Arg		
245	250	255
Asp Ser Val Pro Leu Glu Phe Glu Cys Ile Asn Pro Lys Lys Gln Arg		
260	265	270
Lys Lys Lys Asn Tyr Lys Asn Ser Gly Ile Ile Ile Leu Arg Ser Cys		

275		280		285
Lys Ile Asn Arg Asp Tyr Ser Phe Leu Asp Tyr Ile Leu Gly Gly Cys				
290		295		300
Gln Leu Met Phe Thr Val Gly Ile Asp Phe Thr Ala Ser Asn Gly Asn				
305		310		315
				320
Pro Leu Asp Pro Ser Ser Leu His Tyr Ile Asn Pro Met Gly Thr Asn				
		325		330
				335
Glu Tyr Leu Ser Ala Ile Trp Ala Val Gly Gln Ile Ile Gln Asp Tyr				
		340		345
				350
Asp Ser Asp Lys Met Phe Pro Ala Leu Gly Phe Gly Ala Gln Leu Pro				
		355		360
				365
Pro Asp Trp Lys Val Ser His Glu Phe Ala Ile Asn Phe Asn Pro Thr				
		370		375
				380
Asn Pro Phe Cys Ser Gly Val Asp Gly Ile Ala Gln Ala Tyr Ser Ala				
385		390		395
				400
Cys Leu Pro His Ile Arg Phe Tyr Gly Pro Thr Asn Phe Ser Pro Ile				
		405		410
				415
Val Asn His Val Ala Arg Phe Ala Ala Gln Ala Thr Gln Gln Arg Thr				
		420		425
				430
Ala Thr Gln Tyr Phe Ile Leu Leu Ile Ile Thr Asp Gly Val Ile Ser				
		435		440
				445
Asp Met Glu Glu Thr Arg His Ala Val Val Gln Ala Ser Lys Leu Pro				
		450		455
				460
Met Ser Ile Ile Ile Val Gly Val Gly Asn Ala Asp Phe Ala Ala Met				
465		470		475
				480
Glu Phe Leu Asp Gly Asp Ser Arg Met Leu Arg Ser His Thr Gly Glu				
		485		490
				495
Glu Ala Ala Arg Asp Ile Val Gln Phe Val Pro Phe Arg Glu Phe Arg				
		500		505
				510
Asn Ala Ala Lys Glu Thr Leu Ala Lys Ala Val Leu Ala Glu Leu Pro				
		515		520
				525
Gln Gln Val Val Gln Tyr Phe Lys His Lys Asn Leu Pro Pro Thr Ser				

530

535

540

Tyr Glu Asn Pro Thr

545

&lt;210&gt; 45

&lt;211&gt; 1070

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 45

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cactttgaag gggagaaggt gttccgtgtt aacgttgaag atgaaaatca cattaacata 120
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gccagctacg tcctggaaca cctgtactag ttgagaaagc tgatggcctt 1070

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&lt;210&gt; 46

&lt;211&gt; 349

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 46

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Met Leu Ala Leu Leu Val Leu Val Thr Val Ala Leu Ala Ser Ala His
  1                   5                   10                   15

```

```

His Gly Gly Glu His Phe Glu Gly Glu Lys Val Phe Arg Val Asn Val
      20                   25                   30

```

```

Glu Asp Glu Asn His Ile Asn Ile Ile Arg Glu Leu Ala Thr Phe Ile
      35                   40                   45

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Gln Ile Asp Phe Trp Lys Pro Asp Ser Val Thr Gln Ile Lys Pro His

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65		70		75		80
Ile Ser Asn Leu Arg Asn Val Val Glu Ala Gln Phe Asp Ser Arg Val						
	85		90		95	
Arg Ala Thr Gly His Ser Tyr Glu Lys Tyr Asn Lys Trp Glu Thr Ile						
	100		105		110	
Glu Ala Trp Thr Gln Gln Val Ala Thr Glu Asn Pro Ala Leu Ile Ser						
	115		120		125	
Arg Ser Val Ile Gly Thr Thr Phe Glu Gly Arg Ala Ile Tyr Leu Leu						
	130		135		140	
Lys Val Gly Lys Ala Gly Gln Asn Lys Pro Ala Ile Phe Met Glu Cys						
145		150		155		160
Gly Phe His Ala Arg Glu Trp Ile Ser Pro Ala Phe Cys Gln Trp Phe						
	165		170		175	
Val Arg Glu Ala Val Arg Thr Tyr Gly Arg Glu Ile Gln Val Thr Glu						
	180		185		190	
Leu Leu Asp Lys Leu Asp Phe Tyr Val Leu Pro Val Leu Asn Ile Asp						
	195		200		205	
Gly Tyr Ile Tyr Thr Trp Thr Lys Ser Arg Phe Trp Arg Lys Thr Ser						
	210		215		220	
Leu His Pro Tyr Trp Leu Glu						
225		230				

<210> 49

<211> 693

<212> DNA

<213> Homo sapiens

<400> 49

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gatgaaaatc acattaacat aatccgcgag ttggccagca cgaccagat tgacttctgg 120
aagccagatt ctgtcacaca aatcaaacct cacagtacag ttgacttccg tgtaaagca 180
gaagatactg tcaactgtga gaatgttcta aagcagaatg aactacaata caaggtactg 240
ataagcaacc tgagaaatgt ggtggaggct cagtttgata gccgggttcg tgcaacagga 300
cacagttatg agaagtacaa caagtgggaa acgatagagg cttggactca acaagtcgcc 360
actgagaatc cagccctcat ctctcgaggt gttatcggaa ccacatttga gggacgcgct 420
atttacctcc tgaagggttg caaagctgga caaaataagc ctgccatttt catggactgt 480
ggtttccatg ccagagagtg gatttctcct gcattctgcc agtgggttgt aagagaggct 540

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gttcgtacca atggacgtga gatccaagtg acagagcttc tcgacaagtt agacttttat 600  
 gtcctgcctg tgctcaatat tgatggctac atctacacct ggaccaagag ccgattttgg 660  
 agaaagactt cgctccaccc atactggctc gag 693

<210> 50  
 <211> 231  
 <212> PRT  
 <213> Homo sapiens

<400> 50

Gly	Ser	His	His	Gly	Gly	Glu	His	Phe	Glu	Gly	Glu	Lys	Val	Phe	Arg	1	5	10	15
Val	Asn	Val	Glu	Asp	Glu	Asn	His	Ile	Asn	Ile	Ile	Arg	Glu	Leu	Ala	20	25	30	
Ser	Thr	Thr	Gln	Ile	Asp	Phe	Trp	Lys	Pro	Asp	Ser	Val	Thr	Gln	Ile	35	40	45	
Lys	Pro	His	Ser	Thr	Val	Asp	Phe	Arg	Val	Lys	Ala	Glu	Asp	Thr	Val	50	55	60	
Thr	Val	Glu	Asn	Val	Leu	Lys	Gln	Asn	Glu	Leu	Gln	Tyr	Lys	Val	Leu	65	70	75	80
Ile	Ser	Asn	Leu	Arg	Asn	Val	Val	Glu	Ala	Gln	Phe	Asp	Ser	Arg	Val	85	90	95	
Arg	Ala	Thr	Gly	His	Ser	Tyr	Glu	Lys	Tyr	Asn	Lys	Trp	Glu	Thr	Ile	100	105	110	
Glu	Ala	Trp	Thr	Gln	Gln	Val	Ala	Thr	Glu	Asn	Pro	Ala	Leu	Ile	Ser	115	120	125	
Arg	Ser	Val	Ile	Gly	Thr	Thr	Phe	Glu	Gly	Arg	Ala	Ile	Tyr	Leu	Leu	130	135	140	
Lys	Val	Gly	Lys	Ala	Gly	Gln	Asn	Lys	Pro	Ala	Ile	Phe	Met	Asp	Cys	145	150	155	160
Gly	Phe	His	Ala	Arg	Glu	Trp	Ile	Ser	Pro	Ala	Phe	Cys	Gln	Trp	Phe	165	170	175	
Val	Arg	Glu	Ala	Val	Arg	Thr	Asn	Gly	Arg	Glu	Ile	Gln	Val	Thr	Glu	180	185	190	
Leu	Leu	Asp	Lys	Leu	Asp	Phe	Tyr	Val	Leu	Pro	Val	Leu	Asn	Ile	Asp				

195                      200                      205  
 Gly Tyr Ile Tyr Thr Trp Thr Lys Ser Arg Phe Trp Arg Lys Thr Ser  
 210                      215                      220  
  
 Leu His Pro Tyr Trp Leu Glu  
 225                      230

<210> 51  
 <211> 693  
 <212> DNA  
 <213> Homo sapiens

<400> 51  
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 gatgaaaatc acattaacat aatccgcgag ttggccagca cgaccagat tgacttctgg 120  
 aagccagatt ctgtcacaca aatcaaacct cacagtacag ttgacttccg tgttaaagca 180  
 gaagatactg tcactgtgga gaatgttcta aagcagaatg aactacaata caaggtactg 240  
 ataagcaacc tgagaaatgt ggtggaggct cagtttgata gccgggttcg tgcaacagga 300  
 cacagttagt agaagtacaa caagtgggaa acgatagagg cttggactca acaagtcgcc 360  
 actgagaatc cagccctcat ctctgcaggt gttatcggaa ccacatttga gggacgcgct 420  
 atttacctcc tgaagggttg caaagctgga caaaataagc ctgccatttt catggactgt 480  
 ggtttccatg ccagagagtg gatttctcct gcattctgcc agtgggttgt aagagaggct 540  
 gttcgtacct atggacgtga gatccaagtg acagagcttc tcgacaagtt agacttttat 600  
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 agaaagactt cgctccaccc atactggctc gag 693

<210> 52  
 <211> 231  
 <212> PRT  
 <213> Homo sapiens

<400> 52  
 Gly Ser His His Gly Gly Glu His Phe Glu Gly Glu Lys Val Phe Arg  
 1                      5                      10                      15  
  
 Val Asn Val Glu Asp Glu Asn His Ile Asn Ile Ile Arg Glu Leu Ala  
 20                      25                      30  
  
 Ser Thr Thr Gln Ile Asp Phe Trp Lys Pro Asp Ser Val Thr Gln Ile  
 35                      40                      45  
  
 Lys Pro His Ser Thr Val Asp Phe Arg Val Lys Ala Glu Asp Thr Val  
 50                      55                      60  
  
 Thr Val Glu Asn Val Leu Lys Gln Asn Glu Leu Gln Tyr Lys Val Leu

65		70		75		80
Ile Ser Asn Leu Arg Asn Val Val Glu Ala Gln Phe Asp Ser Arg Val						
	85		90		95	
Arg Ala Thr Gly His Ser Tyr Glu Lys Tyr Asn Lys Trp Glu Thr Ile						
	100		105		110	
Glu Ala Trp Thr Gln Gln Val Ala Thr Glu Asn Pro Ala Leu Ile Ser						
	115		120		125	
Arg Ser Val Ile Gly Thr Thr Phe Glu Gly Arg Ala Ile Tyr Leu Leu						
	130		135		140	
Lys Val Gly Lys Ala Gly Gln Asn Lys Pro Ala Ile Phe Met Asp Cys						
145		150		155		160
Gly Phe His Ala Arg Glu Trp Ile Ser Pro Ala Phe Cys Gln Trp Phe						
	165		170		175	
Val Arg Glu Ala Val Arg Thr Tyr Gly Arg Glu Ile Gln Val Thr Glu						
	180		185		190	
Leu Leu Asp Lys Leu Asp Phe Tyr Val Leu Pro Val Leu Asn Ile Asp						
	195		200		205	
Gly Tyr Ile Tyr Thr Trp Thr Lys Ser Arg Phe Trp Arg Lys Thr Ser						
	210		215		220	
Leu His Pro Tyr Trp Leu Glu						
225		230				

<210> 53

<211> 693

<212> DNA

<213> Homo sapiens

<400> 53

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aagccagatt ctgtcacaca aatcaaacct cacagtacag ttgacttccg tgtaaagca 180
gaagatactg tcaactgtgga gaatgttcta aagcagaatg aactacaata caaggtactg 240
ataagcaacc tgagaaatgt ggtggaggct cagtttgata gccgggttcg tgcaacagga 300
cacagttatg agaagtacaa caagtgggaa acgatagagg cttggactca acaagtcgcc 360
actgagaatc cagccctcat ctctcgagc gttatcggaa ccacatttga gggacgcgtt 420
atttacctcc tgaaggtttg caaagctgga caaaataagc ctgccatttt catggactgt 480
ggtttccatg ccagagagtg gatttctcct gcattccgcc agtggtttgt aagagaggct 540

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gttcgtacct atggacgtga gatccaagt acagagcttc tcgacaagtt agacttttat 600  
gtcctgcctg tgctcaatat tgatggctac atctacacct ggaccaagag ccgattttgg 660  
agaaagactt cgctccaccc atactggctc gag 693

<210> 54

<211> 231

<212> PRT

<213> Homo sapiens

<400> 54

Gly Ser His His Gly Gly Glu His Phe Glu Gly Glu Lys Val Phe Arg  
1 5 10 15

Val Asn Val Glu Asp Glu Asn His Ile Asn Ile Ile Arg Glu Leu Ala  
20 25 30

Ser Thr Thr Gln Ile Asp Phe Trp Lys Pro Asp Ser Val Thr Gln Ile  
35 40 45

Lys Pro His Ser Thr Val Asp Phe Arg Val Lys Ala Glu Asp Thr Val  
50 55 60

Thr Val Glu Asn Val Leu Lys Gln Asn Glu Leu Gln Tyr Lys Val Leu  
65 70 75 80

Ile Ser Asn Leu Arg Asn Val Val Glu Ala Gln Phe Asp Ser Arg Val  
85 90 95

Arg Ala Thr Gly His Ser Tyr Glu Lys Tyr Asn Lys Trp Glu Thr Ile  
100 105 110

Glu Ala Trp Thr Gln Gln Val Ala Thr Glu Asn Pro Ala Leu Ile Ser  
115 120 125

Arg Ser Val Ile Gly Thr Thr Phe Glu Gly Arg Val Ile Tyr Leu Leu  
130 135 140

Lys Val Gly Lys Ala Gly Gln Asn Lys Pro Ala Ile Phe Met Asp Cys  
145 150 155 160

Gly Phe His Ala Arg Glu Trp Ile Ser Pro Ala Phe Arg Gln Trp Phe  
165 170 175

Val Arg Glu Ala Val Arg Thr Tyr Gly Arg Glu Ile Gln Val Thr Glu  
180 185 190

Leu Leu Asp Lys Leu Asp Phe Tyr Val Leu Pro Val Leu Asn Ile Asp

195	200	205
Gly Tyr Ile Tyr Thr Trp Thr Lys Ser Arg Phe Trp Arg Lys Thr Ser		
210	215	220
Leu His Pro Tyr Trp Leu Glu		
225	230	

<210> 55  
 <211> 649  
 <212> DNA  
 <213> Homo sapiens

<400> 55  
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 cacaccacac acaaccagtc ccgaaaatgg cacagaaatg gtatcaagaa accccgatca 120  
 caaagatacg aatctcttaa gggggtggac cccaagttcc tgaggaacat gcgctttgcc 180  
 aagaagcaca acaaaaaggg cctaaagaag atgcaggcca acaatgccaa ggccatgagt 240  
 gcacgtgccg aggctatcaa ggccctcgta aagcccaagg aggttaagcc caagatccca 300  
 aagggtgtca gccgcaagct cgatcgactt gcctacattg cccaccccaa gcttggaag 360  
 cgtgctcgtg cccgtattgc caaggggctc aggtgtgtcc ggccaaaggc caaggccaag 420  
 gccaaaggcca aggccaagga tcaaaccaag gcccaggctg cagccccagc ttcagttcca 480  
 gctcaggctc ccaaacgtac ccaggcccct acaaaggctt cagagtagat atctctgcca 540  
 acatgaggac agaaggactg gtgcgacccc ccacccccgc ccctgggcta ccatctgcat 600  
 ggggctgggg tcctcctgtg ctactggtac aaataaacct gaggcagga 649

<210> 56  
 <211> 161  
 <212> PRT  
 <213> Homo sapiens

<400> 56  
 Met Ala Lys Ser Lys Asn His Thr Thr His Asn Gln Ser Arg Lys Trp  
 1 5 10 15  
 His Arg Asn Gly Ile Lys Lys Pro Arg Ser Gln Arg Tyr Glu Ser Leu  
 20 25 30  
 Lys Gly Val Asp Pro Lys Phe Leu Arg Asn Met Arg Phe Ala Lys Lys  
 35 40 45  
 His Asn Lys Lys Gly Leu Lys Lys Met Gln Ala Asn Asn Ala Lys Ala  
 50 55 60  
 Met Ser Ala Arg Ala Glu Ala Ile Lys Ala Leu Val Lys Pro Lys Glu  
 65 70 75 80



Val Lys Pro Lys Ile Pro Lys Gly Val Ser Arg Lys Leu Asp Arg Leu  
85 90 95

Ala Tyr Ile Ala His Pro Lys Leu Gly Lys Arg Ala Arg Ala Arg Ile  
100 105 110

Ala Lys Gly Leu Arg Leu Cys Arg Pro Lys Ala Lys Ala Lys Ala Lys  
115 120 125

Ala Lys Ala Lys Asp Gln Thr Lys Ala Gln Ala Ala Ala Pro Ala Ser  
130 135 140

Val Pro Ala Gln Ala Pro Lys Arg Thr Gln Ala Pro Thr Lys Ala Ser  
145 150 155 160

Glu

<210> 57

<211> 580

<212> DNA

<213> Homo sapiens

<400> 57

actcactata gggctcgagc ggcgcttcgg gagccgcggc ttatggtgca gacatggcca 60  
agtccaagaa ccacaccaca cacaaccagt cccgaaaatg gcacagaaat ggtatcaaga 120  
aaccgccgatc acaaagatac gaatctctta agggggtgga cccaagtgc ctgaggaaca 180  
tgcgctttgc caagaagcac aacaaaaagg gcctaaagaa gatgcaggcc aacaatgcca 240  
aggccatgag tgcacgtgcc gaggctatca aggccctcgt aaagccaag gaggttaagc 300  
ccaagatccc aaagggtgct agccgcaagc tcgatcgact tgcctacatt gccacccca 360  
agcttgggaa gcggtgctgt gcccgatttg ccaaggggct caggctgtgc cggccaaagg 420  
ccaaggccaa ggccaaagcc aaggccaagg atcaaaccaa ggcccaggct gcagccccag 480  
cttcagttcc agctcaggct cccaaacgta cccaggcccc tacaaaggct tcagagtaga 540  
tatctctgcc aacatgagga cagaaagact ggtgcgaccc 580

<210> 58

<211> 161

<212> PRT

<213> Homo sapiens

<400> 58

Met Ala Lys Ser Lys Asn His Thr Thr His Asn Gln Ser Arg Lys Trp  
1 5 10 15

His Arg Asn Gly Ile Lys Lys Pro Arg Ser Gln Arg Tyr Glu Ser Leu

20	25	30
Lys Gly Val Asp Pro Lys Phe Leu Arg Asn Met Arg Phe Ala Lys Lys		
35	40	45
His Asn Lys Lys Gly Leu Lys Lys Met Gln Ala Asn Asn Ala Lys Ala		
50	55	60
Met Ser Ala Arg Ala Glu Ala Ile Lys Ala Leu Val Lys Pro Lys Glu		
65	70	75
Val Lys Pro Lys Ile Pro Lys Gly Val Ser Arg Lys Leu Asp Arg Leu		
85	90	95
Ala Tyr Ile Ala His Pro Lys Leu Gly Lys Arg Ala Arg Ala Arg Ile		
100	105	110
Ala Lys Gly Leu Arg Leu Cys Arg Pro Lys Ala Lys Ala Lys Ala Lys		
115	120	125
Ala Lys Ala Lys Asp Gln Thr Lys Ala Gln Ala Ala Ala Pro Ala Ser		
130	135	140
Val Pro Ala Gln Ala Pro Lys Arg Thr Gln Ala Pro Thr Lys Ala Ser		
145	150	155
		160

Glu

<210> 59

<211> 1143

<212> DNA

<213> Homo sapiens

<400> 59

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atgagggtcag tgcagatctt cctctcccaa tgccggtttgc tcctttctact agttccgaca 60
atgctcctta agtctcttgg cgaagatgta atttttcacc ctgaagggga gtttgactcg 120
tatgaagtca ccattcctga gaagctgagc ttccggggag aggtgcaggg tgtggtcagt 180
cccgtgtcct acctactgca gttaaaaggc aagaagcacg tcctccattt gtggccaag 240
agacttctgt tgccccgaca tctgcgcgtt ttctccttca cagaacatgg ggaactgctg 300
gaggatcatc cttacataacc aaaggactgc aactacatgg gctccgtgaa agagtctctg 360
gactctaaag ctactataag cacatgcatg gggggtctcc gaggtgtatt taacattgat 420
gccaaacatt accaaattga gccctcaag gcctctccca gttttgaaca tgcgtctat 480
ctcctgaaga aagagcagtt tgggaatcag gcagaaaatc tcatgtgctg gggcacaggc 540
tatcatctat ccatgaaacc catgggaata cctgacctag gtatgataaa tgatggcacc 600
tcctgtggag aaggccgggt atgtttttaa aaaaattgct tcaatagctc agtcctgcag 660
tttgactggt tgctgagaa atgcaatacc cggggtgttt gcaacaacag aaaaagctgc 720

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cactgcatgt atgggtgggc acctccattc tgtgaggaag tggggtatgg aggaagcatt 780
gacagtgggc ctccaggact gctcagaggg gcgattccct cgtcaatttg ggttgtgtcc 840
atcataatgt ttgccttat ttattaatc ctttcagtgg tttttgtgtt tttccggcaa 900
gtgataggaa accacttaaa acccaaacag gaaaaaatgc cactatccaa agcaaaaact 960
gaacaggaag aatctaaaac aaaaactgta caggaagaat ctaaaacaaa aactggacag 1020
gaagaatctg aagcaaaaac tggacaggaa gaatctaaag caaaaactgg acaggaagaa 1080
tctaaagcaa acattgaaag taaacgaccc aaagcaaaga gtgtcaagaa acaaaaaaag 1140
taa 1143

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<210> 60
<211> 380
<212> PRT
<213> Homo sapiens

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<400> 60
Met Arg Ser Val Gln Ile Phe Leu Ser Gln Cys Arg Leu Leu Leu Leu
  1             5             10             15

Leu Val Pro Thr Met Leu Leu Lys Ser Leu Gly Glu Asp Val Ile Phe
      20             25             30

His Pro Glu Gly Glu Phe Asp Ser Tyr Glu Val Thr Ile Pro Glu Lys
      35             40             45

Leu Ser Phe Arg Gly Glu Val Gln Gly Val Val Ser Pro Val Ser Tyr
      50             55             60

Leu Leu Gln Leu Lys Gly Lys Lys His Val Leu His Leu Trp Pro Lys
      65             70             75             80

Arg Leu Leu Leu Pro Arg His Leu Arg Val Phe Ser Phe Thr Glu His
      85             90             95

Gly Glu Leu Leu Glu Asp His Pro Tyr Ile Pro Lys Asp Cys Asn Tyr
      100            105            110

Met Gly Ser Val Lys Glu Ser Leu Asp Ser Lys Ala Thr Ile Ser Thr
      115            120            125

Cys Met Gly Gly Leu Arg Gly Val Phe Asn Ile Asp Ala Lys His Tyr
      130            135            140

Gln Ile Glu Pro Leu Lys Ala Ser Pro Ser Phe Glu His Val Val Tyr
      145            150            155            160

Leu Leu Lys Lys Glu Gln Phe Gly Asn Gln Ala Glu Asn Leu Met Cys
      165            170            175

```

Trp Gly Thr Gly Tyr His Leu Ser Met Lys Pro Met Gly Ile Pro Asp  
180 185 190

Leu Gly Met Ile Asn Asp Gly Thr Ser Cys Gly Glu Gly Arg Val Cys  
195 200 205

Phe Lys Lys Asn Cys Val Asn Ser Ser Val Leu Gln Phe Asp Cys Leu  
210 215 220

Pro Glu Lys Cys Asn Thr Arg Gly Val Cys Asn Asn Arg Lys Ser Cys  
225 230 235 240

His Cys Met Tyr Gly Trp Ala Pro Pro Phe Cys Glu Glu Val Gly Tyr  
245 250 255

Gly Gly Ser Ile Asp Ser Gly Pro Pro Gly Leu Leu Arg Gly Ala Ile  
260 265 270

Pro Ser Ser Ile Trp Val Val Ser Ile Ile Met Phe Arg Leu Ile Leu  
275 280 285

Leu Ile Leu Ser Val Val Phe Val Phe Phe Arg Gln Val Ile Gly Asn  
290 295 300

His Leu Lys Pro Lys Gln Glu Lys Met Pro Leu Ser Lys Ala Lys Thr  
305 310 315 320

Glu Gln Glu Glu Ser Lys Thr Lys Thr Val Gln Glu Glu Ser Lys Thr  
325 330 335

Lys Thr Gly Gln Glu Glu Ser Glu Ala Lys Thr Gly Gln Glu Glu Ser  
340 345 350

Lys Ala Lys Thr Gly Gln Glu Glu Ser Lys Ala Asn Ile Glu Ser Lys  
355 360 365

Arg Pro Lys Ala Lys Ser Val Lys Lys Gln Lys Lys  
370 375 380

<210> 61

<211> 1207

<212> DNA

<213> Homo sapiens

<400> 61

ccgcgggact ccggcggtccc cgccccccag tcctccctcc cctccccctcc agcatgggtgc 60

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tcgcggcccc gctgctgctg ggcttctctgc tctctgcctt ggagctgcgg ccccgggggg 120
aggcggccga gggccccgcg gcgggcgggc cgggcgggc ggcgggcgca gcgggggggg 180
tcggggggga gcgctccagc cggccagccc cgtccgtggc gcccgagccg gacggctgcc 240
ccgtgtgcgt atggcggcag cacagccgcg agctgcgcct agagagcatc aagtcgcaga 300
tcttgagcaa actgcggctc aaggaggcgc ccaacatcag ccgcgaggtg gtgaagcagc 360
tgctgccccaa ggcgccgccg ctgcagcaga tcctggacct acacgacttc cagggcgacg 420
cgctgcagcc cgaggacttc ctggaggagg acgagtacca cgccaccacc gagaccgtca 480
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attttcactt cagccccaag gtgatgttca caaagagcat cgacttcaag caagtgttac 600
acagctgggtt ccgccagcca cagagcaact ggggcatcga gatcaacgcc tttgatccca 660
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tcaatgacaa gcagcagatt atctacggca agatacctgg catggtggtg gatcgctgtg 1080
gctgctctta agtgggtcac tacaagctgc tggagcaaag acttggtggg tgggtaactt 1140
aacctcttca cagaggataa aaaatgcttg tgagtatgac agaagggaat aaacaggctt 1200
aaagggt 1207

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<210> 62

<211> 345

<212> PRT

<213> Homo sapiens

<400> 62

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Met Val Leu Ala Ala Pro Leu Leu Leu Gly Phe Leu Leu Leu Ala Leu
  1              5              10              15

```

```

Glu Leu Arg Pro Arg Gly Glu Ala Ala Glu Gly Pro Ala Ala Ala Ala
      20              25              30

```

```

Ala Ala Ala Ala Ala Ala Ala Ala Gly Val Gly Gly Glu Arg Ser
      35              40              45

```

```

Ser Arg Pro Ala Pro Ser Val Ala Pro Glu Pro Asp Gly Cys Pro Val
      50              55              60

```

```

Cys Val Trp Arg Gln His Ser Arg Glu Leu Arg Leu Glu Ser Ile Lys
      65              70              75              80

```

```

Ser Gln Ile Leu Ser Lys Leu Arg Leu Lys Glu Ala Pro Asn Ile Ser
      85              90              95

```

```

Arg Glu Val Val Lys Gln Leu Leu Pro Lys Ala Pro Pro Leu Gln Gln
      100              105              110

```

Ile Leu Asp Leu His Asp Phe Gln Gly Asp Ala Leu Gln Pro Glu Asp  
 115 120 125  
 Phe Leu Glu Glu Asp Glu Tyr His Ala Thr Thr Glu Thr Val Ile Ser  
 130 135 140  
 Met Ala Gln Glu Thr Asp Pro Ala Val Gln Thr Asp Gly Ser Pro Leu  
 145 150 155 160  
 Cys Cys His Phe His Phe Ser Pro Lys Val Met Phe Thr Lys Ser Ile  
 165 170 175  
 Asp Phe Lys Gln Val Leu His Ser Trp Phe Arg Gln Pro Gln Ser Asn  
 180 185 190  
 Trp Gly Ile Glu Ile Asn Ala Phe Asp Pro Ser Gly Thr Asp Leu Ala  
 195 200 205  
 Val Thr Ser Leu Gly Pro Gly Ala Glu Gly Leu His Pro Phe Met Glu  
 210 215 220  
 Leu Arg Val Leu Glu Asn Thr Lys Arg Ser Arg Arg Asn Leu Gly Leu  
 225 230 235 240  
 Asp Cys Asp Glu His Ser Ser Glu Ser Arg Cys Cys Arg Tyr Pro Leu  
 245 250 255  
 Thr Val Asp Phe Glu Ala Phe Gly Trp Asp Trp Ile Ile Ala Pro Lys  
 260 265 270  
 Arg Tyr Lys Ala Asn Tyr Cys Ser Gly Gln Cys Glu Tyr Met Phe Met  
 275 280 285  
 Gln Lys Tyr Pro His Thr His Leu Val Gln Gln Ala Asn Pro Arg Gly  
 290 295 300  
 Ser Ala Gly Pro Cys Cys Thr Pro Thr Lys Met Ser Pro Ile Asn Met  
 305 310 315 320  
 Leu Tyr Phe Asn Asp Lys Gln Gln Ile Ile Tyr Gly Lys Ile Pro Gly  
 325 330 335  
 Met Val Val Asp Arg Cys Gly Cys Ser  
 340 345

<210> 63

<211> 1341  
 <212> DNA  
 <213> Homo sapiens

<400> 63  
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 tggccctcg gaggggggtca ccgcagtgcc taccagtac cttggagaga tccacaactg 180  
 gaccgagctg cttgacctct tcaaccacac tttgtctgag tgccacgtgg agctcagcca 240  
 gagcaccaag cgcgtgggtc tctttgccct ctacctggcc atgtttgtgg ttgggctggt 300  
 ggagaacctc ctggtgatata gcgtaactg ggcgggctca ggccgggcag ggctgatgaa 360  
 cctctacatc ctcaacatgg ccatcgcgga cctgggcatt gtcctgtctc tgcccggtgtg 420  
 gatgctggag gtcacgctgg actacacctg gctctggggc agcttctcct gccgcttcac 480  
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 gcccttccct ctcatcacag tcttcaatgt gctgacagcc tgccggctgc gccagccagg 840  
 acaaccaag agccggcgcc actgcttgc gctgtgcgcc tacgtggccg tctttgtcat 900  
 gtgctggctg cctatcatg tgaccctgct gctgctcaca ctgcatggga cccacatctc 960  
 cctccactgc cactggtcc acctgctcta cttcttctat gatgtcattg actgcttctc 1020  
 catgctgcac tgtgtcatca acccatcct ttacaacttt ctgagccac acttccgggg 1080  
 ccggtcctg aatgctgtag tccattacct tcctaaggac cagaccaagg cgggcacatg 1140  
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<210> 64  
 <211> 404  
 <212> PRT  
 <213> Homo sapiens

<400> 64  
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 Leu Asp Leu Phe Asn His Thr Leu Ser Glu Cys His Val Glu Leu Ser  
 35 40 45  
 Gln Ser Thr Lys Arg Val Val Leu Phe Ala Leu Tyr Leu Ala Met Phe  
 50 55 60

Val	Val	Gly	Leu	Val	Glu	Asn	Leu	Leu	Val	Ile	Cys	Val	Asn	Trp	Arg	65	70	75	80
Gly	Ser	Gly	Arg	Ala	Gly	Leu	Met	Asn	Leu	Tyr	Ile	Leu	Asn	Met	Ala	85	90	95	
Ile	Ala	Asp	Leu	Gly	Ile	Val	Leu	Ser	Leu	Pro	Val	Trp	Met	Leu	Glu	100	105	110	
Val	Thr	Leu	Asp	Tyr	Thr	Trp	Leu	Trp	Gly	Ser	Phe	Ser	Cys	Arg	Phe	115	120	125	
Thr	His	Tyr	Phe	Tyr	Phe	Val	Asn	Met	Tyr	Ser	Ser	Ile	Phe	Phe	Leu	130	135	140	
Val	Cys	Leu	Ser	Val	Asp	Arg	Tyr	Val	Thr	Leu	Thr	Ser	Ala	Ser	Pro	145	150	155	160
Ser	Trp	Gln	Arg	Tyr	Gln	His	Arg	Val	Arg	Arg	Ala	Met	Cys	Ala	Gly	165	170	175	
Ile	Trp	Val	Leu	Ser	Ala	Ile	Ile	Pro	Leu	Pro	Glu	Val	Val	His	Ile	180	185	190	
Gln	Leu	Val	Glu	Gly	Pro	Glu	Pro	Met	Cys	Leu	Phe	Met	Ala	Pro	Phe	195	200	205	
Glu	Thr	Tyr	Ser	Thr	Trp	Ala	Leu	Ala	Val	Ala	Leu	Ser	Thr	Thr	Ile	210	215	220	
Leu	Gly	Phe	Leu	Leu	Pro	Phe	Pro	Leu	Ile	Thr	Val	Phe	Asn	Val	Leu	225	230	235	240
Thr	Ala	Cys	Arg	Leu	Arg	Gln	Pro	Gly	Gln	Pro	Lys	Ser	Arg	Arg	His	245	250	255	
Cys	Leu	Leu	Leu	Cys	Ala	Tyr	Val	Ala	Val	Phe	Val	Met	Cys	Trp	Leu	260	265	270	
Pro	Tyr	His	Val	Thr	Leu	Leu	Leu	Leu	Thr	Leu	His	Gly	Thr	His	Ile	275	280	285	
Ser	Leu	His	Cys	His	Leu	Val	His	Leu	Leu	Tyr	Phe	Phe	Tyr	Asp	Val	290	295	300	
Ile	Asp	Cys	Phe	Ser	Met	Leu	His	Cys	Val	Ile	Asn	Pro	Ile	Leu	Tyr	305	310	315	320



Asn Phe Leu Ser Pro His Phe Arg Gly Arg Leu Leu Asn Ala Val Val  
 325 330 335

His Tyr Leu Pro Lys Asp Gln Thr Lys Ala Gly Thr Cys Ala Ser Ser  
 340 345 350

Ser Ser Cys Ser Thr Gln His Ser Ile Ile Ile Thr Lys Gly Asp Ser  
 355 360 365

Gln Pro Ala Ala Ala Ala Pro His Pro Glu Pro Ser Leu Ser Phe Gln  
 370 375 380

Ala His His Leu Leu Pro Asn Thr Ser Pro Ile Ser Pro Thr Gln Pro  
 385 390 395 400

Leu Thr Pro Ser

<210> 65

<211> 945

<212> DNA

<213> Homo sapiens

<400> 65

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<210> 66

<211> 314

<212> PRT

<213> Homo sapiens

<400> 66

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Ala Val Pro Thr Ser Asp Leu Gly Glu Ile His Asn Trp Thr Glu Leu  
20 25 30

Leu Asp His Leu Phe Asn His Thr Leu Ser Glu Cys His Val Glu Leu  
35 40 45

Ser Gln Ser Thr Lys Arg Val Val Leu Phe Ala Leu Tyr Leu Ala Met  
50 55 60

Phe Val Val Gly Leu Val Glu Asn Leu Leu Val Ile Cys Val Asn Trp  
65 70 75 80

Arg Gly Ser Gly Arg Ala Gly Leu Met Asn Leu Tyr Ile Leu Asn Met  
85 90 95

Ala Ile Ala Asp Leu Gly Ile Val Leu Ser Leu Pro Val Trp Met Pro  
100 105 110

Glu Val Thr Leu Asp Tyr Thr Trp Leu Trp Gly Ser Phe Ser Cys Arg  
115 120 125

Phe Thr His Tyr Phe Tyr Phe Val Asn Met Tyr Ser Ser Ile Phe Phe  
130 135 140

Leu Val Cys Leu Ser Val Asp Arg Tyr Val Thr Leu Thr Gly Gln Pro  
145 150 155 160

Lys Ser Arg Arg His Cys Leu Leu Leu Cys Ala Tyr Val Ala Val Phe  
165 170 175

Val Met Cys Trp Leu Pro Tyr His Val Thr Leu Leu Leu Leu Thr Leu  
180 185 190

His Gly Thr His Ile Ser Leu His Cys His Leu Val His Leu Leu Tyr  
195 200 205

Phe Phe Tyr Asp Val Ile Asp Cys Phe Ser Met Leu His Cys Val Ile  
210 215 220

Asn Pro Ile Leu Tyr Asn Phe Leu Ser Pro His Phe Arg Gly Arg Leu  
225 230 235 240

Leu Asn Ala Val Val His Tyr Leu Pro Lys Asp Gln Thr Lys Ala Gly  
245 250 255

Thr Cys Ala Ser Ser Ser Ser Cys Ser Thr Gln His Ser Ile Ile Ile  
 260 265 270

Thr Lys Gly Asp Ser Gln Pro Ala Ala Ala Ala Ala Pro His Pro Glu  
 275 280 285

Pro Ser Leu Ser Phe Gln Ala His His Leu Leu Pro Asn Thr Ser Pro  
 290 295 300

Ile Ser Pro Thr Gln Pro Leu Thr Pro Ser  
 305 310

<210> 67  
 <211> 965  
 <212> DNA  
 <213> Homo sapiens

<400> 67  
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 tgtctgagtg ccacgtggag ctcagccaga gcaccaagcg cgtggctctc tttgccctct 180  
 acctggccat gtttgtggtt gggctggtgg agaacctcct ggtgatatgc gtcaactggc 240  
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 gctga 965

<210> 68  
 <211> 320  
 <212> PRT  
 <213> Homo sapiens

<400> 68  
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Ala Val Pro Thr Ser Asp Leu Gly Glu Ile His Asn Trp Thr Glu Leu  
 20 25 30

Leu Asp Leu Phe Asn His Thr Leu Ser Glu Cys His Val Glu Leu Ser  
 35 40 45

Gln Ser Thr Lys Arg Val Val Leu Phe Ala Leu Tyr Leu Ala Met Phe  
 50 55 60

Val Val Gly Leu Val Glu Asn Leu Leu Val Ile Cys Val Asn Trp Arg  
 65 70 75 80

Gly Ser Gly Arg Ala Gly Leu Met Asn Leu Tyr Ile Leu Asn Met Ala  
 85 90 95

Ile Ala Asp Leu Gly Ile Val Leu Ser Leu Pro Val Trp Met Leu Glu  
 100 105 110

Val Thr Leu Asp Tyr Thr Trp Leu Trp Gly Ser Phe Ser Cys Arg Phe  
 115 120 125

Thr His Tyr Phe Tyr Phe Val Asn Met Tyr Ser Ser Ile Phe Phe Leu  
 130 135 140

Leu Pro Phe Pro Leu Ile Thr Val Phe Asn Val Leu Thr Ala Cys Arg  
 145 150 155 160

Leu Arg Gln Pro Gly Gln Pro Lys Ser Arg Arg His Cys Leu Leu Leu  
 165 170 175

Cys Ala Tyr Val Ala Val Phe Val Met Cys Trp Leu Pro Tyr His Val  
 180 185 190

Thr Leu Leu Leu Leu Thr Leu His Gly Thr His Ile Ser Leu His Cys  
 195 200 205

His Leu Val His Leu Leu Tyr Phe Phe Tyr Asp Val Ile Asp Cys Phe  
 210 215 220

Ser Met Leu His Cys Val Ile Asn Pro Ile Leu Tyr Asn Phe Leu Ser  
 225 230 235 240

Pro His Phe Arg Gly Arg Leu Leu Asn Ala Val Val His Tyr Leu Pro  
 245 250 255

Lys Asp Gln Thr Lys Gly Gly His Met Arg Leu Leu Phe Leu Leu Phe  
 260 265 270

His Pro Ala Phe His His His His Gln Gly Asp Ser Gln Pro Ala Ala  
 275 280 285

Ala Ala Pro His Pro Glu Pro Ser Leu Ser Phe Gln Ala His His Leu  
 290 295 300

Leu Pro Asn Thr Ser Pro Ile Ser Pro Thr Gln Pro Leu Thr Pro Ser  
 305 310 315 320

<210> 69  
 <211> 549  
 <212> DNA  
 <213> Homo sapiens

<400> 69  
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 tagaggagct taagaagtat ggagctacca caatagtaag agtatgtgaa gcaacttatg 180  
 acactactct tgtggagaaa gaaggatatcc atgttctcaa ttggcctttt ggtgatggtg 240  
 caccaccatc caaccagatt gttgctgatt gggttacattt tgtaaaaatt aagttttgtg 300  
 aagaacctgg ttgttatatt gctgttaatt gcattgtagg ccttgggaaa gctccagtag 360  
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 gacaaaagcg gagtggagct tttaaaagca agcaactttt gtatttggag aagtatcatc 480  
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 aaaactggg 549

<210> 70  
 <211> 170  
 <212> PRT  
 <213> Homo sapiens

<400> 70  
 Met Asn His Pro Ala Pro Val Lys Val Thr Tyr Lys Asn Met Arg Phe  
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 Pro Ile Thr His Asn Pro Thr Asn Val Thr Leu Asn Lys Phe Ile Glu  
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 Glu Leu Lys Lys Tyr Gly Ala Thr Thr Ile Val Arg Val Cys Glu Ala  
 35 40 45  
 Thr Tyr Asp Thr Thr Leu Val Glu Lys Glu Gly Ile His Val Leu Asn  
 50 55 60

Trp Pro Phe Gly Asp Gly Ala Pro Pro Ser Asn Gln Ile Val Ala Asp  
65 70 75 80

Trp Leu His Phe Val Lys Ile Lys Phe Cys Glu Glu Pro Gly Cys Tyr  
85 90 95

Ile Ala Val Asn Cys Ile Val Gly Leu Gly Lys Ala Pro Val Leu Val  
100 105 110

Ala Leu Ala Ser Val Glu Gly Gly Met Lys His Glu Asp Ala Val Gln  
115 120 125

Phe Ile Gly Gln Lys Arg Ser Gly Ala Phe Lys Ser Lys Gln Leu Leu  
130 135 140

Tyr Leu Glu Lys Tyr His Pro Lys Met Arg Leu Arg Phe Lys Asp Ser  
145 150 155 160

Asn Ser His Ile Asn Asn Cys Cys Ile Gln  
165 170

<210> 71

<211> 850

<212> DNA

<213> Homo sapiens

<400> 71

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cttggtggaga aagaaggtat ccatgttctc aattggcctt ttggtgatgg tgcaccacca 240  
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ggttggttata ttgctgttaa ttgcattgta ggcttggga aagctccagt acttgttgcc 360  
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gattccaata gtgctgcgct tcaaagattc caatagtgtc gcgcttcaaa gattccaata 780  
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<210> 72

<211> 176

<212> PRT

<213> Homo sapiens

<400> 72

Met Asn His Pro Ala Pro Val Met Asn His Pro Ala Pro Val Lys Val  
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Thr Tyr Lys Asn Met Arg Phe Pro Ile Thr His Asn Pro Thr Asn Val  
20 25 30

Thr Leu Asn Lys Phe Ile Glu Glu Leu Lys Lys Tyr Gly Ala Thr Thr  
35 40 45

Ile Val Arg Val Cys Glu Ala Thr Tyr Asp Thr Thr Leu Val Glu Lys  
50 55 60

Glu Gly Ile His Val Leu Asn Trp Pro Phe Gly Asp Gly Ala Pro Pro  
65 70 75 80

Ser Asn Gln Ile Val Ala Asp Trp Leu His Phe Val Lys Ile Lys Phe  
85 90 95

Cys Glu Glu Pro Gly Cys Tyr Ile Ala Val Asn Cys Ile Val Gly Leu  
100 105 110

Gly Lys Ala Pro Val Leu Val Ala Leu Ala Ser Val Glu Gly Gly Met  
115 120 125

Lys His Glu Asp Ala Val Gln Phe Ile Gly Gln Lys Arg Ser Gly Ala  
130 135 140

Phe Lys Ser Lys Gln Leu Leu Tyr Leu Glu Lys Tyr His Pro Lys Met  
145 150 155 160

Arg Leu Arg Phe Lys Asp Ser Asn Ser Ala Ala Leu Gln Arg Phe Gln  
165 170 175

<210> 73

<211> 1144

<212> DNA

<213> Homo sapiens

<400> 73

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<210> 74

<211> 355

<212> PRT

<213> Homo sapiens

<400> 74

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Met Ser Arg Gln Leu Ser Arg Ala Arg Pro Ala Thr Val Leu Gly Ala
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Met Glu Met Gly Arg Arg Met Asp Ala Pro Thr Ser Ala Ala Val Thr
          20              25              30

Arg Ala Phe Leu Glu Arg Gly His Thr Glu Ile Asp Thr Ala Phe Leu
      35              40              45

Tyr Ser Asp Gly Gln Ser Glu Thr Ile Leu Gly Gly Leu Gly Leu Arg
      50              55              60

Met Gly Ser Ser Asp Cys Arg Val Lys Ile Ala Thr Lys Ala Asn Pro
      65              70              75              80

Trp Ile Gly Asn Ser Leu Lys Pro Asp Ser Val Arg Ser Gln Leu Glu
          85              90              95

Thr Ser Leu Lys Arg Leu Gln Cys Pro Arg Val Asp Leu Phe Tyr Leu
      100              105              110

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His Ala Pro Asp His Ser Ala Pro Val Glu Glu Thr Leu Arg Ala Cys  
 115 120 125  
 His Gln Leu His Gln Glu Gly Lys Phe Val Glu Leu Gly Leu Ser Asn  
 130 135 140  
 Tyr Ala Ala Trp Glu Val Ala Glu Ile Cys Thr Leu Cys Lys Ser Asn  
 145 150 155 160  
 Gly Trp Ile Leu Pro Thr Val Tyr Gln Gly Met Tyr Ser Ala Thr Thr  
 165 170 175  
 Arg Gln Val Glu Thr Glu Leu Phe Pro Cys Leu Arg His Phe Gly Leu  
 180 185 190  
 Arg Phe Tyr Ala Tyr Asn Pro Leu Ala Asp Gln Ser Pro Glu Gly Cys  
 195 200 205  
 Gly Ser Phe Trp Gly Thr Leu Gly Pro Gly Ala Asp Cys Cys Leu Pro  
 210 215 220  
 Ala Gly Gly Leu Leu Thr Gly Lys Tyr Lys Tyr Glu Asp Lys Asp Gly  
 225 230 235 240  
 Lys Gln Pro Val Gly Arg Phe Phe Gly Thr Gln Trp Ala Glu Ile Tyr  
 245 250 255  
 Arg Asn Gln Phe Trp Lys Glu His His Phe Glu Gly Ile Ala Leu Val  
 260 265 270  
 Glu Lys Ala Leu Gln Ala Ala Tyr Gly Ala Ser Ala Pro Ser Met Thr  
 275 280 285  
 Ser Ala Ala Leu Arg Trp Met Tyr His His Ser Gln Leu Gln Gly Ala  
 290 295 300  
 His Gly Asp Ala Val Ile Leu Gly Met Ser Ser Leu Glu Gln Leu Glu  
 305 310 315 320  
 Gln Asn Leu Ala Ala Ala Glu Glu Gly Pro Leu Glu Pro Ala Val Val  
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 Asp Ala Phe Asn Gln Ala Trp His Leu Phe Ala His Glu Cys Pro Asn  
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 Tyr Phe Ile  
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<210> 75  
 <211> 2171  
 <212> DNA  
 <213> Homo sapiens

<400> 75  
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<210> 76  
 <211> 708

<212> PRT

<213> Homo sapiens

<400> 76

Met Glu Arg Thr Ala Gly Lys Glu Leu Ala Ala Pro Leu Gln Asp Trp  
1 5 10 15

Gly Glu Glu Thr Glu Asp Gly Ala Val Tyr Ser Val Ser Leu Arg Arg  
20 25 30

Gln Arg Ser Gln Arg Ser Asp His Gln Arg Ser Gly Val Gly Gln Ala  
35 40 45

Pro Ser Pro Ile Ala Asn Thr Phe Leu His Tyr Arg Thr Ser Lys Val  
50 55 60

Arg Val Leu Arg Ala Ala Arg Leu Glu Arg Leu Val Gly Glu Leu Val  
65 70 75 80

Phe Gly Asp Arg Glu Gln Asp Pro Ser Phe Met Pro Ala Phe Leu Ala  
85 90 95

Thr Tyr Arg Thr Phe Val Pro Thr Ala Cys Leu Leu Gly Phe Leu Leu  
100 105 110

Pro Pro Met Pro Pro Pro Pro Pro Pro Gly Val Glu Ile Lys Lys Thr  
115 120 125

Ala Val Gln Asp Leu Ser Phe Asn Lys Asn Leu Arg Ala Val Val Ser  
130 135 140

Val Leu Gly Ser Trp Leu Gln Asp His Pro Gln Asp Phe Arg Asp Pro  
145 150 155 160

Pro Ala His Ser Asp Leu Gly Ser Val Arg Thr Phe Leu Gly Trp Ala  
165 170 175

Ala Pro Gly Ser Ala Glu Ala Gln Lys Ala Glu Lys Leu Leu Glu Asp  
180 185 190

Phe Leu Glu Glu Ala Glu Arg Glu Gln Glu Glu Glu Pro Pro Gln Val  
195 200 205

Trp Ser Gly Pro Pro Arg Val Ala Gln Thr Ser Asp Pro Asp Ser Ser  
210 215 220

Glu Ala Cys Ala Glu Glu Glu Glu Gly Leu Met Pro Gln Gly Pro Gln  
225 230 235 240

Leu Leu Asp Phe Ser Val Asp Glu Val Ala Glu Gln Leu Thr Leu Ile  
 245 250 255  
 Asp Leu Glu Leu Phe Ser Lys Val Arg Leu Tyr Glu Cys Leu Gly Ser  
 260 265 270  
 Val Trp Ser Gln Arg Asp Arg Pro Gly Ala Ala Gly Ala Ser Pro Thr  
 275 280 285  
 Val Arg Ala Thr Val Ala Gln Phe Asn Thr Val Thr Gly Cys Val Leu  
 290 295 300  
 Gly Ser Val Leu Gly Ala Pro Gly Leu Ala Ala Pro Gln Arg Ala Gln  
 305 310 315 320  
 Arg Leu Glu Lys Trp Ile Arg Ile Ala Gln Arg Cys Arg Glu Leu Arg  
 325 330 335  
 Asn Phe Ser Ser Leu Arg Ala Ile Leu Ser Ala Leu Gln Ser Asn Pro  
 340 345 350  
 Ile Tyr Arg Leu Lys Arg Ser Trp Gly Ala Val Ser Arg Glu Pro Leu  
 355 360 365  
 Ser Thr Phe Arg Lys Leu Ser Gln Ile Phe Ser Asp Glu Asn Asn His  
 370 375 380  
 Leu Ser Ser Arg Glu Ile Leu Phe Gln Glu Glu Ala Thr Glu Gly Ser  
 385 390 395 400  
 Gln Glu Glu Asp Asn Thr Pro Gly Ser Leu Pro Ser Lys Pro Pro Pro  
 405 410 415  
 Gly Pro Val Pro Tyr Leu Gly Thr Phe Leu Thr Asp Leu Val Met Leu  
 420 425 430  
 Asp Thr Ala Leu Pro Asp Met Leu Glu Gly Asp Leu Ile Asn Phe Glu  
 435 440 445  
 Lys Arg Arg Lys Glu Trp Glu Ile Leu Ala Arg Ile Gln Gln Leu Gln  
 450 455 460  
 Arg Arg Cys Gln Ser Tyr Thr Leu Ser Pro His Pro Pro Ile Leu Ala  
 465 470 475 480  
 Ala Leu His Ala Gln Asn Gln Leu Thr Glu Glu Gln Ser Tyr Arg Leu  
 485 490 495

Ser Arg Val Ile Glu Pro Pro Ala Ala Ser Cys Pro Ser Ser Pro Arg  
 500 505 510  
 Ile Arg Arg Arg Ile Ser Leu Thr Lys Arg Leu Ser Ala Lys Leu Ala  
 515 520 525  
 Arg Glu Lys Ser Ser Ser Pro Ser Gly Ser Pro Gly Asp Pro Ser Ser  
 530 535 540  
 Pro Thr Ser Ser Val Ser Pro Gly Ser Pro Pro Ser Ser Pro Arg Ser  
 545 550 555 560  
 Arg Asp Ala Pro Ala Gly Ser Pro Pro Ala Ser Pro Gly Pro Gln Gly  
 565 570 575  
 Pro Ser Thr Lys Leu Pro Leu Ser Leu Asp Leu Pro Ser Pro Arg Ser  
 580 585 590  
 Pro Val Thr Leu Asp Pro Phe Ser Ala Arg Val Pro Leu Pro Ala Gln  
 595 600 605  
 Gln Ser Ser Glu Ala Arg Val Ile Arg Val Ser Ile Asp Asn Asp His  
 610 615 620  
 Gly Asn Leu Tyr Arg Ser Ile Leu Leu Thr Ser Gln Asp Lys Ala Pro  
 625 630 635 640  
 Ser Val Val Arg Arg Ala Leu Gln Lys His Asn Val Pro Gln Pro Trp  
 645 650 655  
 Ala Cys Asp Tyr Gln Leu Phe Gln Val Leu Pro Gly Asp Arg Leu Leu  
 660 665 670  
 Ile Pro Asp Asn Ala Asn Val Phe Tyr Ala Met Ser Pro Val Ala Pro  
 675 680 685  
 Arg Asp Phe Met Leu Arg Arg Lys Glu Gly Thr Arg Asn Thr Leu Ser  
 690 695 700  
 Val Ser Pro Ser  
 705

<210> 77

<211> 717

<212> DNA

<213> Homo sapiens

<400> 77

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ctgcctgggc gtgctctgcg tgctgtccgc ggacaagaac acgacccagc acccgaacgt 180  
gacgacttta gcgcccattt ccaacgtaaa atcattgatt tcatgcatct ctccccccaa 240  
ctccccagaa acctgtgaag gtcgaaacag ctgcgtttcc tgttttaatg ttagcgttgt 300  
taatactacc tgcttttgga tagaatgtcc cccaacagat gagagctatt gttcacataa 360  
ctcaacagtt agtgattgtc aagtggggaa cagcacagac ttctgttccg gtaagtattc 420  
atattggctg cttggaagca ttccagctaa acccacagtt cagccctccc cttctacaac 480  
ttccaagaca gttactacat caggtacaac aaataacact gtgactccaa cctcacaacc 540  
tgtgcgaaag tctacctttg atgcagccag tttcattgga ggaattgtcc tggctctggg 600  
tgtgcaggct gtaattttct ttctttataa attctgcaaa tctaaagaac gaaattacca 660  
cactctgtaa acagacccat tgaattaata aggactggtg attcatttgt gtaactc 717

<210> 78

<211> 195

<212> PRT

<213> Homo sapiens

<400> 78

Met Ser Arg Leu Ser Arg Ser Leu Leu Trp Ala Ala Thr Cys Leu Gly  
1 5 10 15  
Val Leu Cys Val Leu Ser Ala Asp Lys Asn Thr Thr Gln His Pro Asn  
20 25 30  
Val Thr Thr Leu Ala Pro Ile Ser Asn Val Lys Ser Leu Ile Ser Cys  
35 40 45  
Ile Ser Pro Pro Asn Ser Pro Glu Thr Cys Glu Gly Arg Asn Ser Cys  
50 55 60  
Val Ser Cys Phe Asn Val Ser Val Val Asn Thr Thr Cys Phe Trp Ile  
65 70 75 80  
Glu Cys Pro Pro Thr Asp Glu Ser Tyr Cys Ser His Asn Ser Thr Val  
85 90 95  
Ser Asp Cys Gln Val Gly Asn Thr Thr Asp Phe Cys Ser Gly Lys Tyr  
100 105 110  
Ser Tyr Trp Leu Leu Gly Ser Ile Pro Ala Lys Pro Thr Val Gln Pro  
115 120 125  
Ser Pro Ser Thr Thr Ser Lys Thr Val Thr Thr Ser Gly Thr Thr Asn  
130 135 140

Asn Thr Val Thr Pro Thr Ser Gln Pro Val Arg Lys Ser Thr Phe Asp  
 145 150 155 160

Ala Ala Ser Phe Ile Gly Gly Ile Val Leu Val Leu Gly Val Gln Ala  
 165 170 175

Val Ile Phe Phe Leu Tyr Lys Phe Cys Lys Ser Lys Glu Arg Asn Tyr  
 180 185 190

His Thr Leu  
 195

<210> 79  
 <211> 2082  
 <212> DNA  
 <213> Homo sapiens

<400> 79  
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 cattggcaag tgactgtcta ttcacatctc tcttctgtt gttgagttag tgaggagg 180  
 agcctgccgg ggatccacag ctcccagttt cctcactc attacacagt gctcttgcc 240  
 ctgcatgtgc tgtcacggcc atttggggc tatatctgt ctcttagagg acagggacta 300  
 aatctctcaa attcaggttt ctctgtgtc cctacctggg gcccgcccg ggctgtttt 360  
 ctctgtttca aatgccaggg ctacttatgg actcctattc aacctgcaa accctacttg 420  
 aatgctccct cagttctgaa gcctccctgg ctgctccttc cagcctccc acaacaaca 480  
 cagcaccacc actatataat ggctaaatct gttgagcagt tgccatgggc cagacactgt 540  
 gctgagtaca tggatatgtt ttcttcttta atcctcaca cccctcgagt cagccccaag 600  
 ctaggctacc ctttggcaaa ttcacatcat tattcaatca agagcctctg gggagaaaag 660  
 ttggaaaacc cagccctcta cctggacaca gtccagagcc tatggattcc tgaagagccc 720  
 cctgtacctc caggaggcag cgtgagaatt aaaaaggacc ctgaacttgt ggtgaccgac 780  
 ctgcgttttg ggacgatacc cgtgaggctg ttccagccga aggcagcatc ctccagaccc 840  
 cggcgaggca tcatcttcta ccatggaggg gccacagtat ttgggagcct ggattgttac 900  
 catggcctgt gcaattatct ggcccgggag actgaatctg tacttctgat gattgggtac 960  
 cgcaagcttc ctgaccacca ttcccctgcc cttttccaag actgcatgaa tgcctccatt 1020  
 cacttcctga aggccctgga aacctatggg gtggaccct ccagggttgt ggtctgtgga 1080  
 gaaagcgtcg gaggtgcagc ggtggccgcc atcaccagc ccttggtggg cagatcagat 1140  
 cttccccgga tccgggctca ggttctgatt tatccagttg tccaggcatt ctgtttgcag 1200  
 tcgccatcct ttcagcagaa ccaaaatgtc ccattacttt cccggaagtt catggtgact 1260  
 tctctgtgta actatctggc cattgacctc tcttgccgtg acgccatctt gaacggcact 1320  
 tgcgtacccc cagacgtctg gaggaagtac gagaagtggc tcaccctga caacatcccc 1380  
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 tatctagaag ccaaacatat gctggatgta gaaaattcac ccctgatagc agatgatgag 1500  
 gtcacgtctc agcttctga ggccttctg gtgagctgtg agaatgacat actccgtgat 1560  
 gacagcttgc tctataagaa gcgcttgagg gaccagggg tccgcgtgac atgggtaccac 1620  
 ctgtatgatg gttttcacgg atccattatc ttttttgata agaaggctct ctctttccca 1680

tggtccctga agattgtgaa tgctgtagtc agttatataa agggcatatg atagtaaccc 1740  
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 ttctatttta ttgactaaag aggtgctaca tcaatgcttg gggcagctgg gaaggggtgag 1860  
 aagtaagcta acagtcttgc ttagtattca agaaaatcca aactgtgtct gtttccttcc 1920  
 agcactaaca atgtccattg ctggatctag cgacattctc taacattccc atttaggtga 1980  
 aataaatatc aaaaggagaa aaaaatgcct ttaaaaattt ctcaaagccc caacatataa 2040  
 gatctgtgca gaataaatgc caacaactgg tcataaccgtc aa 2082

<210> 80

<211> 410

<212> PRT

<213> Homo sapiens

<400> 80

Met Ala Lys Ser Val Glu Gln Leu Pro Trp Ala Arg His Cys Ala Glu  
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Tyr Met Asp Met Phe Ser Ser Leu Ile Leu Thr Thr Pro Arg Val Ser  
 20 25 30

Pro Lys Leu Gly Tyr Pro Leu Ala Asn Ser His His Tyr Ser Ile Lys  
 35 40 45

Ser Leu Trp Gly Glu Lys Leu Glu Asn Pro Ala Leu Tyr Leu Asp Thr  
 50 55 60

Val Gln Ser Leu Trp Ile Pro Glu Glu Pro Pro Val Pro Thr Gly Gly  
 65 70 75 80

Ser Val Arg Ile Lys Lys Asp Pro Glu Leu Val Val Thr Asp Leu Arg  
 85 90 95

Phe Gly Thr Ile Pro Val Arg Leu Phe Gln Pro Lys Ala Ala Ser Ser  
 100 105 110

Arg Pro Arg Arg Gly Ile Ile Phe Tyr His Gly Gly Ala Thr Val Phe  
 115 120 125

Gly Ser Leu Asp Cys Tyr His Gly Leu Cys Asn Tyr Leu Ala Arg Glu  
 130 135 140

Thr Glu Ser Val Leu Leu Met Ile Gly Tyr Arg Lys Leu Pro Asp His  
 145 150 155 160

His Ser Pro Ala Leu Phe Gln Asp Cys Met Asn Ala Ser Ile His Phe  
 165 170 175



Leu Lys Ala Leu Glu Thr Tyr Gly Val Asp Pro Ser Arg Val Val Val  
 180 185 190  
 Cys Gly Glu Ser Val Gly Gly Ala Ala Val Ala Ala Ile Thr Gln Ala  
 195 200 205  
 Leu Val Gly Arg Ser Asp Leu Pro Arg Ile Arg Ala Gln Val Leu Ile  
 210 215 220  
 Tyr Pro Val Val Gln Ala Phe Cys Leu Gln Ser Pro Ser Phe Gln Gln  
 225 230 235 240  
 Asn Gln Asn Val Pro Leu Leu Ser Arg Lys Phe Met Val Thr Ser Leu  
 245 250 255  
 Cys Asn Tyr Leu Ala Ile Asp Leu Ser Trp Arg Asp Ala Ile Leu Asn  
 260 265 270  
 Gly Thr Cys Val Pro Pro Asp Val Trp Arg Lys Tyr Glu Lys Trp Leu  
 275 280 285  
 Thr Pro Asp Asn Ile Pro Lys Lys Phe Lys Asn Thr Gly Tyr Gln Pro  
 290 295 300  
 Trp Ser Pro Gly Pro Phe Asn Glu Ala Ala Tyr Leu Glu Ala Lys His  
 305 310 315 320  
 Met Leu Asp Val Glu Asn Ser Pro Leu Ile Ala Asp Asp Glu Val Ile  
 325 330 335  
 Ala Gln Leu Pro Glu Ala Phe Leu Val Ser Cys Glu Asn Asp Ile Leu  
 340 345 350  
 Arg Asp Asp Ser Leu Leu Tyr Lys Lys Arg Leu Glu Asp Gln Gly Val  
 355 360 365  
 Arg Val Thr Trp Tyr His Leu Tyr Asp Gly Phe His Gly Ser Ile Ile  
 370 375 380  
 Phe Phe Asp Lys Lys Ala Leu Ser Phe Pro Cys Ser Leu Lys Ile Val  
 385 390 395 400  
 Asn Ala Val Val Ser Tyr Ile Lys Gly Ile  
 405 410

<210> 81  
 <211> 1008

<212> DNA

<213> Homo sapiens

<400> 81

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cttgattccc gccttcactc acccatgtac ttcttcctct gcaacttctc cctcatggag 180
atggtgggtca cctccactgt ggtacatagg atgctggcag acctgctatc cactcacaag 240
accatgtccc tggccaaatg cctaaccag tctttctttt acttctccct gggctctgcc 300
aacttcctga tactcatggt catggccttt gatcgctacg tggccatctg ccacccctg 360
cgctacccaa ccatcacgaa tgggccagtg tgtgtgaagc tgggtggtggc ctgttgggtg 420
gttggtttcc tctccattgt ctctcccaca ctgcagaaaa cacgactctg gttctgtggc 480
cctaacatca tgggccacta cttctgtgac tctgccccgc tgctcaagct tgcctgctct 540
gacaccgccg acattgagcg catggacctc ttctgtccc tgctctttgt gctgaccacc 600
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ggctatggca gtgccatctt catctacgtg aggccaggca agggccactc cacatactc 780
aacaaggcgg tggccatggt gactgcaatg gtaaccctt tcctcaacc cttcatcttc 840
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ggagaccag cagcctgtag gtgagagggt gagcccttga cagggctaga gagcacctga 960
caagtcacga ggagtagact tgctgcaggt gggcacccac atgcctaa 1008
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<210> 82

<211> 307

<212> PRT

<213> Homo sapiens

<400> 82

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Ala Glu Glu Leu Leu Gly Phe Ser Tyr Leu His Glu Phe Gln Val Leu
  1              5              10              15

Leu Phe Ala Leu Ile Leu Leu Ile Tyr Val Leu Met Leu Leu Gly Asn
      20              25              30

Leu Ala Ile Ile Ser Phe Ile Cys Leu Asp Ser Arg Leu His Ser Pro
      35              40              45

Met Tyr Phe Phe Leu Cys Asn Phe Ser Leu Met Glu Met Val Val Thr
      50              55              60

Ser Thr Val Val His Arg Met Leu Ala Asp Leu Leu Ser Thr His Lys
      65              70              75              80

Thr Met Ser Leu Ala Lys Cys Leu Thr Gln Ser Phe Phe Tyr Phe Ser
      85              90              95

Leu Gly Ser Ala Asn Phe Leu Ile Leu Met Val Met Ala Phe Asp Arg
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100 105 110  
 Tyr Val Ala Ile Cys His Pro Leu Arg Tyr Pro Thr Ile Thr Asn Gly  
 115 120 125  
 Pro Val Cys Val Lys Leu Val Val Ala Cys Trp Val Val Gly Phe Leu  
 130 135 140  
 Ser Ile Val Ser Pro Thr Leu Gln Lys Thr Arg Leu Trp Phe Cys Gly  
 145 150 155 160  
 Pro Asn Ile Ile Gly His Tyr Phe Cys Asp Ser Ala Pro Leu Leu Lys  
 165 170 175  
 Leu Ala Cys Ser Asp Thr Arg His Ile Glu Arg Met Asp Leu Phe Leu  
 180 185 190  
 Ser Leu Leu Phe Val Leu Thr Thr Met Leu Leu Ile Ile Leu Ser Tyr  
 195 200 205  
 Ile Leu Ile Val Ala Ala Val Leu His Ile Pro Ser Ser Ser Gly Cys  
 210 215 220  
 Gln Lys Ala Phe Ser Thr Cys Ala Pro His Leu Thr Val Val Val Leu  
 225 230 235 240  
 Gly Tyr Gly Ser Ala Ile Phe Ile Tyr Val Arg Pro Gly Lys Gly His  
 245 250 255  
 Ser Thr Tyr Leu Asn Lys Ala Val Ala Met Val Thr Ala Met Val Thr  
 260 265 270  
 Pro Phe Leu Asn Pro Phe Ile Phe Thr Phe Arg Asn Glu Lys Val Lys  
 275 280 285  
 Glu Val Ile Glu Asp Val Thr Lys Arg Ile Phe Leu Gly Asp Pro Ala  
 290 295 300  
 Ala Cys Arg  
 305

<210> 83  
 <211> 2233  
 <212> DNA  
 <213> Homo sapiens

<400> 83

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ccggggctgg aggggggcaa gcgggttccg aggtgcaaag cctggtgccc cgagccctgc 60
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ggcctgcacg gctgtgctgg agaacctctt cttctctgct gtactcctgg gctggggctc 180
cctgttgatc attctgaaga acgagggctt ctattccagc acgtgcccag ctgagagcag 240
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gatcctcatg gaccgctttg gcccccgacc cgtgcggctg gttggcagtg cctgcttcac 420
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ggaagtcaat tacacgaaga agatcaagct gagtgggctg gccctggacc acaaggtgac 720
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ctatgctgca gtgttcccat ccaaccactt tgggacgctg acaggcctgc agtccctcat 1440
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tttttgtaaa gactgcaaaa aggaggaaaa aaaaccttca aaaacgccc ctaagtcaac 1860
gctccattga ctgaagacag tccctatcct agaggggttg agctttcttc ctcttgggt 1920
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atgtgtctgt gtatgtgtga atgtgagaaa aacacagccc tcctttcaga aggaaagggg 2100
cctgaggtgc cagctgtgtc ctgggttagg ggttgggggt cgcccccttc cagggccagg 2160
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tgagaaaaaa aaa 2233

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<210> 84

<211> 528

<212> PRT

<213> Homo sapiens

<400> 84

Met Ala Pro Thr Leu Gln Gln Ala Tyr Arg Arg Arg Trp Trp Met Ala

1

5

10

15

Cys Thr Ala Val Leu Glu Asn Leu Phe Phe Ser Ala Val Leu Leu Gly  
 20 25 30  
 Trp Gly Ser Leu Leu Ile Ile Leu Lys Asn Glu Gly Phe Tyr Ser Ser  
 35 40 45  
 Thr Cys Pro Ala Glu Ser Ser Thr Asn Thr Thr Gln Asp Glu Gln Arg  
 50 55 60  
 Arg Trp Pro Gly Cys Asp Gln Gln Asp Glu Met Leu Asn Leu Gly Phe  
 65 70 75 80  
 Thr Ile Gly Ser Phe Val Leu Ser Ala Thr Thr Leu Pro Leu Gly Ile  
 85 90 95  
 Leu Met Asp Arg Phe Gly Pro Arg Pro Val Arg Leu Val Gly Ser Ala  
 100 105 110  
 Cys Phe Thr Ala Ser Cys Thr Leu Met Ala Leu Ala Ser Arg Asp Val  
 115 120 125  
 Glu Ala Leu Ser Pro Leu Ile Phe Leu Ala Leu Ser Leu Asn Gly Phe  
 130 135 140  
 Gly Gly Ile Cys Leu Thr Phe Thr Ser Leu Lys Leu Ile Tyr Asp Ala  
 145 150 155 160  
 Gly Val Ala Phe Val Val Ile Met Phe Thr Trp Ser Gly Leu Ala Cys  
 165 170 175  
 Leu Ile Phe Leu Asn Cys Thr Leu Asn Trp Pro Ile Glu Ala Phe Pro  
 180 185 190  
 Ala Pro Glu Glu Val Asn Tyr Thr Lys Lys Ile Lys Leu Ser Gly Leu  
 195 200 205  
 Ala Leu Asp His Lys Val Thr Gly Asp Leu Phe Tyr Thr His Val Thr  
 210 215 220  
 Thr Met Gly Gln Arg Leu Ser Gln Lys Ala Pro Ser Leu Glu Asp Gly  
 225 230 235 240  
 Ser Asp Ala Phe Met Ser Pro Gln Asp Val Arg Gly Thr Ser Glu Asn  
 245 250 255  
 Leu Pro Glu Arg Ser Val Pro Leu Arg Lys Ser Leu Cys Ser Pro Thr  
 260 265 270

Phe Leu Trp Ser Leu Leu Thr Met Cys Met Thr Gln Leu Arg Ile Ile  
275 280 285

Phe Tyr Met Ala Ala Val Asn Lys Met Leu Glu Tyr Leu Val Thr Gly  
290 295 300

Gly Gln Glu His Glu Thr Asn Glu Gln Gln Lys Val Ala Glu Thr  
305 310 315 320

Val Gly Phe Tyr Ser Ser Val Phe Gly Ala Met Gln Leu Leu Cys Leu  
325 330 335

Leu Thr Cys Pro Leu Ile Gly Tyr Ile Met Asp Trp Arg Ile Lys Asp  
340 345 350

Cys Val Asp Ala Pro Thr Gln Gly Thr Val Leu Gly Asp Ala Arg Asp  
355 360 365

Gly Val Ala Thr Lys Ser Ile Arg Pro Arg Tyr Cys Lys Ile Gln Lys  
370 375 380

Leu Thr Asn Ala Ile Ser Ala Phe Thr Leu Thr Asn Leu Leu Leu Val  
385 390 395 400

Gly Phe Gly Ile Thr Cys Leu Ile Asn Asn Leu His Leu Gln Phe Val  
405 410 415

Thr Phe Val Leu His Thr Ile Val Arg Gly Phe Phe His Ser Ala Cys  
420 425 430

Gly Ser Leu Tyr Ala Ala Val Phe Pro Ser Asn His Phe Gly Thr Leu  
435 440 445

Thr Gly Leu Gln Ser Leu Ile Ser Ala Val Phe Ala Leu Leu Gln Gln  
450 455 460

Pro Leu Phe Met Ala Met Val Gly Pro Leu Lys Gly Glu Pro Phe Trp  
465 470 475 480

Val Asn Leu Gly Leu Leu Leu Phe Ser Leu Leu Gly Phe Leu Leu Pro  
485 490 495

Ser Tyr Leu Phe Tyr Tyr Arg Ala Arg Leu Gln Gln Glu Tyr Ala Ala  
500 505 510

Asn Gly Met Gly Pro Leu Lys Val Leu Ser Gly Ser Glu Val Thr Ala  
515 520 525

<210> 85  
 <211> 415  
 <212> DNA  
 <213> Homo sapiens

<400> 85  
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 cgctgacctc cgcttgctac atccagaact gccccctggg aggcaagagg gccgcgccgg 120  
 aagagctggg ctgcttcgtg ggcaccgccg aagcgctgcg ctgccaggag gagaactacc 180  
 tgccgtcgcc ctgccagtcc ggccagaagg cgtgcgggag cgggggccgc tgcgcggtct 240  
 tgggcctctg ctgcagcccg gacggctgcc acgccgaccc tgcctgcgac gcggaagcca 300  
 ccttctccca gcgctgaaac ttgatggctc cgaacaccct cgaagcgcg cactcgcttc 360  
 ccccatagcc accccagaaa tggtgaaaat aaaataaagc aggtttttct cctct 415

<210> 86  
 <211> 99  
 <212> PRT  
 <213> Homo sapiens

<400> 86  
 Met Ala Gly Pro Ser Leu Ala Cys Cys Leu Leu Gly Leu Leu Ala Leu  
 1 5 10 15  
 Thr Ser Ala Cys Tyr Ile Gln Asn Cys Pro Leu Gly Gly Lys Arg Ala  
 20 25 30  
 Ala Pro Glu Glu Leu Gly Cys Phe Val Gly Thr Ala Glu Ala Leu Arg  
 35 40 45  
 Cys Gln Glu Glu Asn Tyr Leu Pro Ser Pro Cys Gln Ser Gly Gln Lys  
 50 55 60  
 Ala Cys Gly Ser Gly Gly Arg Cys Ala Val Leu Gly Leu Cys Cys Ser  
 65 70 75 80  
 Pro Asp Gly Cys His Ala Asp Pro Ala Cys Asp Ala Glu Ala Thr Phe  
 85 90 95  
 Ser Gln Arg

<210> 87  
 <211> 201  
 <212> DNA  
 <213> Homo sapiens

<400> 87  
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 gagaaattca gtaagtcgaa actgaagaag acagaaatgc aagagaaaaa tccacagcct 120  
 tccaaggaat ggatcgaaca ggagaagcaa gcaggcttcg taatgaggcg tgcacacca 180  
 atatgcacta agggcgaata a 201

<210> 88  
 <211> 50  
 <212> PRT  
 <213> Homo sapiens

<400> 88  
 Met Asp Glu Ile Glu Lys Phe Ser Lys Ser Lys Leu Lys Lys Thr Glu  
 1 5 10 15  
 Met Gln Glu Lys Asn Pro Gln Pro Ser Lys Glu Trp Ile Glu Gln Glu  
 20 25 30  
 Lys Gln Ala Gly Phe Val Met Arg Arg Ala Ser Pro Ile Cys Thr Lys  
 35 40 45  
 Gly Glu  
 50

<210> 89  
 <211> 246  
 <212> DNA  
 <213> Homo sapiens

<400> 89  
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 gagaaattca gtaagtcgaa actgaagaag acagaaatgc aagagaaaaa tccacagcct 120  
 tccaaggaat ggatcgaaca ggagaagcaa gcaggcttcg taatgaggcg tgcacgccca 180  
 atatgcactg ttcattccac aaagcattgc tttctatattt acttctttta gctgttttaac 240  
 tttgaa 246

<210> 90  
 <211> 66  
 <212> PRT  
 <213> Homo sapiens



<400> 90

Met Ser Asp Lys Ser Asn Met Asp Glu Ile Glu Lys Phe Ser Lys Ser  
1 5 10 15

Lys Leu Lys Lys Thr Glu Met Gln Glu Lys Asn Pro Gln Pro Ser Lys  
20 25 30

Glu Trp Ile Glu Gln Glu Lys Gln Ala Gly Phe Val Met Arg Arg Ala  
35 40 45

Ser Pro Ile Cys Thr Val His Ser Thr Lys His Cys Phe Leu Phe Tyr  
50 55 60

Phe Phe  
65

<210> 91

<211> 201

<212> DNA

<213> Homo sapiens

<400> 91

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gagaaattca gtaagtcgaa actgaagaag acagaaatgc aagagaaaaa tccacagcct 120  
tccaaggaat ggatcgaaca ggagaagcaa gcaggcttcg taatgaggcg tgcacacca 180  
atatgcacta agggcgaata a 201

<210> 92

<211> 56

<212> PRT

<213> Homo sapiens

<400> 92

Met Ser Asp Lys Ser Asn Met Asp Glu Ile Glu Lys Phe Ser Lys Ser  
1 5 10 15

Lys Leu Lys Lys Thr Glu Met Gln Glu Lys Asn Pro Gln Pro Ser Lys  
20 25 30

Glu Trp Ile Glu Gln Glu Lys Gln Ala Gly Phe Val Met Arg Arg Ala  
35 40 45

Ser Pro Ile Cys Thr Lys Gly Glu  
50 55

<210> 93  
 <211> 457  
 <212> DNA  
 <213> Homo sapiens

<400> 93  
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 gccgtttggc aaaaccact gtgaccatca gtacagatgg agatgtcatc acaataaaaa 180  
 caaaagcat ctttaaaaat aatgagatct cctttaagct gggagaagag tttgaggaaa 240  
 tcacgccagg tggccacaaa acaaagagta aagtaacctt agataaggag tccctgattc 300  
 aagttcagga ctgggatggc aaagaaacca ccataacgag aaagctggtg gatgggaaaa 360  
 tgggtggtga aagtactgtg aacagtgtta tctgtacacg aacatacgag aaagtatcat 420  
 caaactcagt ctcaaactct taaggctttc tcaagct 457

<210> 94  
 <211> 140  
 <212> PRT  
 <213> Homo sapiens

<400> 94  
 Met Ile Asp Gln Leu Gln Gly Thr Trp Lys Ser Ile Ser Cys Glu Asn  
 1 5 10 15  
 Ser Glu Asp Tyr Met Lys Glu Leu Gly Ile Gly Arg Ala Ser Arg Lys  
 20 25 30  
 Leu Gly Arg Leu Ala Lys Pro Thr Val Thr Ile Ser Thr Asp Gly Asp  
 35 40 45  
 Val Ile Thr Ile Lys Thr Lys Ser Ile Phe Lys Asn Asn Glu Ile Ser  
 50 55 60  
 Phe Lys Leu Gly Glu Glu Phe Glu Glu Ile Thr Pro Gly Gly His Lys  
 65 70 75 80  
 Thr Lys Ser Lys Val Thr Leu Asp Lys Glu Ser Leu Ile Gln Val Gln  
 85 90 95  
 Asp Trp Asp Gly Lys Glu Thr Thr Ile Thr Arg Lys Leu Val Asp Gly  
 100 105 110  
 Lys Met Val Val Glu Ser Thr Val Asn Ser Val Ile Cys Thr Arg Thr  
 115 120 125  
 Tyr Glu Lys Val Ser Ser Asn Ser Val Ser Asn Ser

130

135

140

&lt;210&gt; 95

&lt;211&gt; 408

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 95

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gaggattaca  tgaaagaact  gggtttcgca  gcccggaaca  tggcaggggt  agtgaaaccg  120
acagtaacta  ttagtggtga  tgggaaaatg  atgaccataa  gaacagaaag  ttctttccag  180
gacactaaga  tctccttcaa  gctgggggaa  gaatttgatg  aaactacagc  agacaaccgg  240
aaagtaaaga  gcaccataac  attagagaat  ggctcaatga  ttcacgtcca  aaaatggctt  300
ggcaaagaga  caacaatcaa  aagaaaaatt  gtggatgaaa  aaatggtagt  ggaatgtaaa  360
atgaataata  ttgtcagcac  cagaatctac  gaaaagggtg  gaagaaag           408

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&lt;210&gt; 96

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 96

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Met Val Glu Pro Phe Leu Gly Thr Trp Lys Leu Val Ser Ser Glu Asn
 1              5              10              15

Phe Glu Asp Tyr Met Lys Glu Leu Gly Phe Ala Ala Arg Asn Met Ala
      20              25              30

Gly Leu Val Lys Pro Thr Val Thr Ile Ser Val Asp Gly Lys Met Met
      35              40              45

Thr Ile Arg Thr Glu Ser Ser Phe Gln Asp Thr Lys Ile Ser Phe Lys
      50              55              60

Leu Gly Glu Glu Phe Asp Glu Thr Thr Ala Asp Asn Arg Lys Val Lys
      65              70              75              80

Ser Thr Ile Thr Leu Glu Asn Gly Ser Met Ile His Val Gln Lys Trp
      85              90              95

Leu Gly Lys Glu Thr Thr Ile Lys Arg Lys Ile Val Asp Glu Lys Met
      100             105             110

Val Val Glu Cys Lys Met Asn Asn Ile Val Ser Thr Arg Ile Tyr Glu
      115             120             125

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Lys Val  
130

<210> 97  
<211> 459  
<212> DNA  
<213> Homo sapiens

<400> 97  
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cggaacatgg cagggtagt gaaaccgaca gtaactatta gtgttgatgg gaaaatgatg 180  
accataagaa cagaaagttc tttccaggac actaagatct cttcaagct gggggaagaa 240  
tttgatgaaa ctacagcaga caaccgaaa gtaaagagca ccataacatt agagaatggc 300  
tcaatgattc acgtccaaaa atggcttggc aaagagacaa caatcaaaag aaaaattgtg 360  
gatgaaaaaa tggtagtgga atgtaaaatg aataatattg tcagcaccag aatctacgaa 420  
aagggtgtgaa gaaaggtcca cagcaatgaa aacttgttc 459

<210> 98  
<211> 133  
<212> PRT  
<213> Homo sapiens

<400> 98  
Met Met Val Glu Pro Phe Leu Gly Thr Trp Lys Leu Val Ser Ser Glu  
1 5 10 15  
Asn Phe Glu Asp Tyr Met Lys Glu Leu Gly Val Asn Phe Ala Ala Arg  
20 25 30  
Asn Met Ala Gly Leu Val Lys Pro Thr Val Thr Ile Ser Val Asp Gly  
35 40 45  
Lys Met Met Thr Ile Arg Thr Glu Ser Ser Phe Gln Asp Thr Lys Ile  
50 55 60  
Ser Phe Lys Leu Gly Glu Glu Phe Asp Glu Thr Thr Ala Asp Asn Arg  
65 70 75 80  
Lys Val Lys Ser Thr Ile Thr Leu Glu Asn Gly Ser Met Ile His Val  
85 90 95  
Gln Lys Trp Leu Gly Lys Glu Thr Thr Ile Lys Arg Lys Ile Val Asp  
100 105 110  
Glu Lys Met Val Val Glu Cys Lys Met Asn Asn Ile Val Ser Thr Arg

115

120

125

Ile Tyr Glu Lys Val  
130

&lt;210&gt; 99

&lt;211&gt; 1238

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 99

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gtacgtgtag tcctgaaacc agctttttctc tctccaaaga agcaccaagg gagcatctgg 60
accaccaggc tgcacaccaa cccttcccca gaccgcgatt ccgacaagag acgggggcacc 120
cttcattgca aagagatttc cccagatcct ttctccttga tctaccaaac tttccagatc 180
tttccaaagc tgatatcaat gggcagaatc caaatatcca ggtcaccata gaggtggtcg 240
acggctcctga ctctgaagca gataaagatc agcatccgga gaataagccc agctgggtcag 300
tcccatcccc cgactggcgg gcctgggtggc agagggtccct gtccttggcc agggcaaaca 360
gcggggacca ggactacaag tacgacagta cctcagacga cagcaacttc ctcaaccccc 420
ccagggggtg ggaccataca gcccaggcc accggacttt tgaaaccaa gatcagccag 480
aatatgattc cacagatggc gaggggtgact ggagtctctg gtctgtctgc agcgtcacct 540
gcgggaacgg caaccagaaa cggaccgggt cttgtggcta cgcgtgcact gcaacagaat 600
cgaggacctg tgaccgtcca aactgcccag gaattgaaga cacttttagg acagctgcca 660
ccgaagttag tctgcttgcg ggaagcgagg agtttaatgc caccaaactg tttgaagttg 720
acacagacag ctgtgagcgc tggatgagct gcaaaagcga gttcttaaag aagtacatgc 780
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&lt;210&gt; 100

&lt;211&gt; 411

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 100

Thr Cys Ser Pro Glu Thr Ser Phe Ser Leu Ser Lys Glu Ala Pro Arg  
1 5 10 15

Glu His Leu Asp His Gln Ala Ala His Gln Pro Phe Pro Arg Pro Arg  
20 25 30

Phe Arg Gln Glu Thr Gly His Pro Ser Leu Gln Arg Asp Phe Pro Arg

35	40	45
Ser Phe Leu Leu Asp Leu Pro Asn Phe Pro Asp Leu Ser Lys Ala Asp		
50	55	60
Ile Asn Gly Gln Asn Pro Asn Ile Gln Val Thr Ile Glu Val Val Asp		
65	70	75 80
Gly Pro Asp Ser Glu Ala Asp Lys Asp Gln His Pro Glu Asn Lys Pro		
85	90	95
Ser Trp Ser Val Pro Ser Pro Asp Trp Arg Ala Trp Trp Gln Arg Ser		
100	105	110
Leu Ser Leu Ala Arg Ala Asn Ser Gly Asp Gln Asp Tyr Lys Tyr Asp		
115	120	125
Ser Thr Ser Asp Asp Ser Asn Phe Leu Asn Pro Pro Arg Gly Trp Asp		
130	135	140
His Thr Ala Pro Gly His Arg Thr Phe Glu Thr Lys Asp Gln Pro Glu		
145	150	155 160
Tyr Asp Ser Thr Asp Gly Glu Gly Asp Trp Ser Leu Trp Ser Val Cys		
165	170	175
Ser Val Thr Cys Gly Asn Gly Asn Gln Lys Arg Thr Arg Ser Cys Gly		
180	185	190
Tyr Ala Cys Thr Ala Thr Glu Ser Arg Thr Cys Asp Arg Pro Asn Cys		
195	200	205
Pro Gly Ile Glu Asp Thr Phe Arg Thr Ala Ala Thr Glu Val Ser Leu		
210	215	220
Leu Ala Gly Ser Glu Glu Phe Asn Ala Thr Lys Leu Phe Glu Val Asp		
225	230	235 240
Thr Asp Ser Cys Glu Arg Trp Met Ser Cys Lys Ser Glu Phe Leu Lys		
245	250	255
Lys Tyr Met His Lys Val Met Asn Asp Leu Pro Ser Cys Pro Cys Ser		
260	265	270
Tyr Pro Thr Glu Val Ala Tyr Ser Thr Ala Asp Ile Phe Asp Arg Ile		
275	280	285
Lys Arg Lys Asp Phe Arg Trp Lys Asp Ala Ser Gly Pro Lys Glu Lys		

290	295	300
Leu Glu Ile Tyr Lys Pro Thr Ala Arg Tyr Cys Ile Arg Ser Met Leu		
305	310	315 320
Ser Leu Glu Ser Thr Thr Leu Ala Ala Gln His Cys Cys Tyr Gly Asp		
325	330	335
Asn Met Gln Leu Ile Thr Arg Gly Lys Gly Ala Gly Thr Pro Asn Leu		
340	345	350
Ile Gly Thr Glu Phe Ser Ala Glu Leu His Tyr Lys Val Asp Val Leu		
355	360	365
Pro Trp Ile Ile Cys Lys Gly Asp Trp Ser Arg Tyr Asn Glu Ala Arg		
370	375	380
Pro Pro Asn Asn Gly Gln Glu Cys Thr Glu Ser Pro Ser Asp Glu Asp		
385	390	395 400
Tyr Ile Lys Gln Phe Gln Glu Ala Arg Glu Tyr		
405	410	

<210> 101  
 <211> 1463  
 <212> DNA  
 <213> Homo sapiens

<400> 101  
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 aggaactcac tctgggggcc tcacaggacg aggtagctgc cttcttcgtg gctgacctg 180  
 gtgccatagt gaggaagcac ttttgctttc tgaagtgcct gccacgagtc cggccctttt 240  
 atgctgtcaa gtgcaacagc agcccagggtg tgctgaagggt tctggcccag ctggggctgg 300  
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 atgggatcca gctgctgagc tttgacaatg agatggagct ggcaaagggtg gtaaagagcc 480  
 accccagtgc caagatggtt ctgtgcattg ctaccgatga ctcccactcc ctgagctgcc 540  
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 agcaccatgt ggaggtggtg ggtgtgagtt ttcacattgg cagtggctgt cctgacctc 660  
 aggcctatgc tcagtccatc gcagacgccc ggctcgtgtt tgaaatgggc accgagctgg 720  
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 aaaatggttc cacctccaag accatcgtgt accaccttga tgagggcgtg tatgggatct 1020  
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cggagcagcc cctgtacagc agcagcctgt ggggcccggc ggttgatggc tgtgattgcg 1140  
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 tgggcgccta cactgtgggc atgggttccc ccttttgggg gaccagggcc tgccacatca 1260  
 cctatgccat gtcccgggtg gcctggcgaa ggcagctgat ggctgcagaa caggaggatg 1320  
 acgtggaggg tgtgtgcaag cctctgtcct gcggtggga gatcacagac accctgtgcg 1380  
 tgggccctgt cttcacccca gcgagcatca tgtgagtggg cctcgttccc cccggagaat 1440  
 cccagcgggg cctcagagat gca 1463

<210> 102

<211> 454

<212> PRT

<213> Homo sapiens

<400> 102

Met Ala Gly Tyr Leu Ser Glu Ser Asp Phe Val Met Val Glu Glu Gly  
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Phe Ser Thr Arg Asp Leu Leu Lys Glu Leu Thr Leu Gly Ala Ser Gln  
 20 25 30

Asp Glu Val Ala Ala Phe Phe Val Ala Asp Leu Gly Ala Ile Val Arg  
 35 40 45

Lys His Phe Cys Phe Leu Lys Cys Leu Pro Arg Val Arg Pro Phe Tyr  
 50 55 60

Ala Val Lys Cys Asn Ser Ser Pro Gly Val Leu Lys Val Leu Ala Gln  
 65 70 75 80

Leu Gly Leu Gly Phe Ser Cys Ala Asn Lys Ala Glu Met Glu Leu Val  
 85 90 95

Gln His Ile Gly Ile Pro Ala Ser Lys Ile Ile Cys Ala Asn Pro Cys  
 100 105 110

Lys Gln Ile Ala Gln Ile Lys Tyr Ala Ala Lys His Gly Ile Gln Leu  
 115 120 125

Leu Ser Phe Asp Asn Glu Met Glu Leu Ala Lys Val Val Lys Ser His  
 130 135 140

Pro Ser Ala Lys Met Val Leu Cys Ile Ala Thr Asp Asp Ser His Ser  
 145 150 155 160

Leu Ser Cys Leu Ser Leu Lys Phe Gly Val Ser Leu Lys Ser Cys Arg  
 165 170 175



His Leu Leu Glu Asn Ala Lys Lys His His Val Glu Val Val Gly Val  
 180 185 190  
 Ser Phe His Ile Gly Ser Gly Cys Pro Asp Pro Gln Ala Tyr Ala Gln  
 195 200 205  
 Ser Ile Ala Asp Ala Arg Leu Val Phe Glu Met Gly Thr Glu Leu Gly  
 210 215 220  
 His Lys Met His Val Leu Asp Leu Gly Gly Gly Phe Pro Gly Thr Glu  
 225 230 235 240  
 Gly Ala Lys Val Arg Phe Glu Glu Ile Ala Ser Val Ile Asn Ser Ala  
 245 250 255  
 Leu Asp Leu Tyr Phe Pro Glu Gly Cys Gly Val Asp Ile Phe Ala Glu  
 260 265 270  
 Leu Gly Arg Tyr Tyr Val Thr Ser Ala Phe Thr Val Ala Val Ser Ile  
 275 280 285  
 Ile Ala Lys Lys Glu Val Leu Leu Asp Gln Pro Gly Arg Glu Glu Glu  
 290 295 300  
 Asn Gly Ser Thr Ser Lys Thr Ile Val Tyr His Leu Asp Glu Gly Val  
 305 310 315 320  
 Tyr Gly Ile Phe Asn Ser Val Leu Phe Asp Asn Ile Cys Pro Thr Pro  
 325 330 335  
 Ile Leu Gln Lys Lys Pro Ser Thr Glu Gln Pro Leu Tyr Ser Ser Ser  
 340 345 350  
 Leu Trp Gly Pro Ala Val Asp Gly Cys Asp Cys Val Ala Glu Gly Leu  
 355 360 365  
 Trp Leu Pro Gln Leu His Val Gly Asp Trp Leu Val Phe Asp Asn Met  
 370 375 380  
 Gly Ala Tyr Thr Val Gly Met Gly Ser Pro Phe Trp Gly Thr Gln Ala  
 385 390 395 400  
 Cys His Ile Thr Tyr Ala Met Ser Arg Val Ala Trp Arg Arg Gln Leu  
 405 410 415  
 Met Ala Ala Glu Gln Glu Asp Asp Val Glu Gly Val Cys Lys Pro Leu  
 420 425 430

Ser Cys Gly Trp Glu Ile Thr Asp Thr Leu Cys Val Gly Pro Val Phe  
 435 440 445

Thr Pro Ala Ser Ile Met  
 450

<210> 103  
 <211> 1613  
 <212> DNA  
 <213> Homo sapiens

<400> 103  
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 ctctgggggc ctcacaggcc accacggcag agatggagtt ggtccagcat attggaatcc 180  
 ctgccagtaa gatcatctgc gccaaaccct gtaagcaaat tgcacagatc aaatatgctg 240  
 ccaagcatgg gatccagctg ctgagctttg acaatgagat ggagctggca aaggtggtaa 300  
 agagccaccc cagtgccaaag atggttctgt gcattgctac cgatgactcc cactccctga 360  
 gctgcctgag cctaaagttt ggagtgtcac tgaaatcctg cagacacctg cttgaaaatg 420  
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 accctcaggc ctatgctcag tccatcgag acgcccggct cgtgtttgaa atgggcaccg 540  
 agctgggtca caagatgcac gttctggacc ttggtgggtg cttccctggc acagaagggg 600  
 ccaaagttag atttgaagag attgcttccg tgatcaactc agccttggac ctgtacttcc 660  
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 tcaactgtggc agtcagcatc attgccaaag agggaggttct gctagaccag cctggcaggg 780  
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 ctgcagtgtt tctgccctgt aaataggacc agtcttacac tcgctgtagt tcaagtatgc 1440  
 aacataaatc ctgttccttc cagctgtgtc tgccctcctc gcagtgcagg gggcctggtc 1500  
 agccaggtgt gggggtgttc ttgggtctc ctttggtctc cttccacct ttgtaaatat 1560  
 aatgcaaata aataaatatt taggttttta aaaactgaaa aaaaaaaaaa aaa 1613

<210> 104  
 <211> 402  
 <212> PRT  
 <213> Homo sapiens

<400> 104

Met Ala Gly Tyr Leu Ser Glu Ser Asp Phe Val Met Val Glu Glu Gly  
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 20 25 30  
 Ala Thr Thr Ala Glu Met Glu Leu Val Gln His Ile Gly Ile Pro Ala  
 35 40 45  
 Ser Lys Ile Ile Cys Ala Asn Pro Cys Lys Gln Ile Ala Gln Ile Lys  
 50 55 60  
 Tyr Ala Ala Lys His Gly Ile Gln Leu Leu Ser Phe Asp Asn Glu Met  
 65 70 75 80  
 Glu Leu Ala Lys Val Val Lys Ser His Pro Ser Ala Lys Met Val Leu  
 85 90 95  
 Cys Ile Ala Thr Asp Asp Ser His Ser Leu Ser Cys Leu Ser Leu Lys  
 100 105 110  
 Phe Gly Val Ser Leu Lys Ser Cys Arg His Leu Leu Glu Asn Ala Lys  
 115 120 125  
 Lys His His Val Glu Val Val Gly Val Ser Phe His Ile Gly Ser Gly  
 130 135 140  
 Cys Pro Asp Pro Gln Ala Tyr Ala Gln Ser Ile Ala Asp Ala Arg Leu  
 145 150 155 160  
 Val Phe Glu Met Gly Thr Glu Leu Gly His Lys Met His Val Leu Asp  
 165 170 175  
 Leu Gly Gly Gly Phe Pro Gly Thr Glu Gly Ala Lys Val Arg Phe Glu  
 180 185 190  
 Glu Ile Ala Ser Val Ile Asn Ser Ala Leu Asp Leu Tyr Phe Pro Glu  
 195 200 205  
 Gly Cys Gly Val Asp Ile Phe Ala Glu Leu Gly Arg Tyr Tyr Val Thr  
 210 215 220  
 Ser Ala Phe Thr Val Ala Val Ser Ile Ile Ala Lys Lys Glu Val Leu  
 225 230 235 240  
 Leu Asp Gln Pro Gly Arg Glu Glu Glu Asn Gly Ser Thr Ser Lys Thr  
 245 250 255

Ile Val Tyr His Leu Asp Glu Gly Val Tyr Gly Ile Phe Asn Ser Val  
 260 265 270

Leu Phe Asp Asn Ile Cys Pro Thr Pro Ile Leu Gln Lys Lys Pro Ser  
 275 280 285

Thr Glu Gln Pro Leu Tyr Ser Ser Ser Leu Trp Gly Pro Ala Val Asp  
 290 295 300

Gly Cys Asp Cys Val Ala Glu Gly Leu Trp Leu Pro Gln Leu His Val  
 305 310 315 320

Gly Asp Trp Leu Val Phe Asp Asn Met Gly Ala Tyr Thr Val Gly Met  
 325 330 335

Gly Ser Pro Phe Trp Gly Thr Gln Ala Cys His Ile Thr Tyr Ala Met  
 340 345 350

Ser Arg Val Ala Trp Glu Ala Leu Arg Arg Gln Leu Met Ala Ala Glu  
 355 360 365

Gln Glu Asp Asp Val Glu Gly Val Cys Lys Pro Leu Ser Cys Gly Trp  
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Glu Ile Thr Asp Thr Leu Cys Val Gly Pro Val Phe Thr Pro Ala Ser  
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Ile Met

<210> 105

<211> 679

<212> DNA

<213> Homo sapiens

<400> 105

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<210> 106

<211> 218

<212> PRT

<213> Homo sapiens

<400> 106

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20 25 30

Ala Thr Thr Asp Glu Val Ala Ala Phe Phe Val Ala Asp Leu Gly Ala  
35 40 45

Ile Val Arg Lys His Phe Cys Phe Leu Lys Cys Leu Pro Arg Val Arg  
50 55 60

Pro Phe Tyr Ala Val Lys Cys Asn Ser Ser Pro Gly Val Leu Lys Val  
65 70 75 80

Leu Ala Gln Leu Gly Leu Gly Phe Ser Cys Ala Asn Ile Cys Pro Thr  
85 90 95

Pro Ile Leu Gln Lys Lys Pro Ser Thr Glu Gln Pro Leu Tyr Ser Ser  
100 105 110

Ser Leu Trp Gly Pro Ala Val Asp Gly Cys Asp Cys Val Ala Glu Gly  
115 120 125

Leu Trp Leu Pro Gln Leu His Val Gly Asp Trp Leu Val Phe Asp Asn  
130 135 140

Met Gly Ala Tyr Thr Val Gly Met Gly Ser Pro Phe Trp Gly Thr Gln  
145 150 155 160

Ala Cys His Ile Thr Tyr Ala Met Ser Arg Val Ala Trp Glu Ala Leu  
165 170 175

Arg Arg Gln Leu Met Ala Ala Glu Gln Glu Asp Asp Val Glu Gly Val  
180 185 190

Cys Lys Pro Leu Ser Cys Gly Trp Glu Ile Thr Asp Thr Leu Cys Val  
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Gly Pro Val Phe Thr Pro Ala Ser Ile Met

210

215

<210> 107

<211> 2972

<212> DNA

<213> Homo sapiens

<400> 107

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<210> 108

<211> 760

<212> PRT

<213> Homo sapiens

<400> 108

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```

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Ser Ala Val Ala Glu Asp Pro Thr Trp Gly Glu Asp Glu Glu Pro Ser
                20                   25                   30

```

```

Ala Cys Thr Thr Asp Ser Trp Ala Gln Gly Ser Val Pro Val Leu His
                35                   40                   45

```

```

Ala Ser Thr Ser Glu Gly Leu Glu Asn Phe Gln Gly Glu Val His Ser
                50                   55                   60

```

```

Ser Gly Ala Ser Pro Asp Ser Ser Ala Ile Ala Pro Ala Leu Pro Phe
        65                   70                   75                   80

```

```

Pro Thr Ser His Cys Pro Ser Ala Phe Pro Gln Asp Pro Gly Gly Val
                85                   90                   95

```

```

Asp Arg Ile Pro Leu Gly Arg Ser Trp Met Gly Arg Gly Ser Gln Glu
                100                   105                   110

```

```

Gln Met Glu Ser Trp Glu Pro Ser Pro Gln Leu Arg Val Thr Ser Ala
                115                   120                   125

```

```

Pro Pro Pro Thr Ser Glu Leu Phe Gln Glu Ala Gly Pro Gly Gly Pro
                130                   135                   140

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```

Val Glu Glu Ala Asp Gly Gln Ser Arg Gly Leu Ser Ser Ala Gly Ser

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 Ala Asp Pro Ser Leu Asp Pro Tyr Leu Val Ala Ser Pro Gln Ala Ser  
    180                                      185                                      190  
 Thr Gly Arg Gly His Pro Leu Gly Phe His Leu Ser Leu Glu Asp Leu  
    195                                      200                                      205  
 Tyr Cys Cys Met Pro Gln Leu Asp Ala Ala Gly Asp Arg Leu Glu Leu  
    210                                      215                                      220  
 Arg Ser Glu Gly Val Pro Cys Ile Ala Ser Gly Val Leu Val Ser Tyr  
    225                                      230                                      235                                      240  
 Pro Ser Val Gly Gly Ala Thr Arg Pro Ser Ala Ser Cys Gln Gln Gln  
    245                                      250                                      255  
 Arg Ala Gly His Ser Asp Val Arg Leu Ser Ala His His His Arg Met  
    260                                      265                                      270  
 Arg Arg Lys Ala Ala Val Lys Arg Leu Asp Pro Ala Arg Leu Pro Cys  
    275                                      280                                      285  
 His Trp Val Arg Pro Leu Ala Glu Val Leu Val Pro Asp Ser Gln Thr  
    290                                      295                                      300  
 Arg Pro Leu Glu Ala Tyr Arg Gly Arg Gln Arg Gly Glu Lys Thr Lys  
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 Ala Ala Phe Phe Pro Leu Arg Pro Gly Ile Pro Phe Arg Asp Leu Asp  
    340                                      345                                      350  
 Ser Gly Pro Ala Leu Leu Phe Pro Thr Leu Asn Leu Gly Leu Ser Ser  
    355                                      360                                      365  
 Pro Ser Leu Glu Ser Lys Leu Pro Leu Pro Asn Ser Arg Ile Arg Phe  
    370                                      375                                      380  
 Leu Thr Thr His Pro Val Leu Pro Asp Val Ala Arg Ser Arg Ser Pro  
    385                                      390                                      395                                      400  
 Lys Leu Trp Pro Ser Val Arg Trp Pro Ser Gly Trp Glu Gly Lys Ala



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Gly Leu Glu Leu Ala Asp Arg Glu Gly Gln Asp Pro Gly Arg Trp Pro		
435	440	445
Arg Thr Thr Pro Pro Val Leu Glu Ala Thr Ser Gln Val Met Trp Lys		
450	455	460
Pro Val Leu Leu Pro Glu Ala Leu Lys Leu Ala Pro Gly Val Ser Met		
465	470	475
		480
Trp Asn Arg Ser Thr Gln Val Leu Leu Ser Ser Gly Val Pro Glu Gln		
485	490	495
Glu Asp Lys Glu Gly Ser Thr Phe Pro Pro Val Glu Gln His Pro Ile		
500	505	510
Gln Thr Gly Ala Pro Lys Pro Ser Ile Ser Pro Ala Gly Pro Gly Ser		
515	520	525
Phe Cys Tyr Val Ala Val Gly Cys Thr Gln His Pro Gly Leu Gly Arg		
530	535	540
Trp Leu Cys Leu Pro Tyr Ser Gly Leu Leu Gln Leu His Val Gln Leu		
545	550	555
		560
Trp Gln Lys Ser His Pro Trp Asp Leu Gln Cys Cys Ser Thr Asp Leu		
565	570	575
Thr Gly Lys Ile Ala Ile Val Thr Gly Ala Asn Ser Gly Ile Gly Lys		
580	585	590
Val Val Ser Gln Asp Leu Ala Arg Cys Gly Ala Gln Val Ile Leu Thr		
595	600	605
Cys Gln Ser Arg Glu Cys Gly Gln Gln Ala Leu Ala Glu Ile Gln Ala		
610	615	620
Ala Ser Asn Ser Asn Arg Leu Leu Leu Gly Glu Val Asp Leu Ser Ser		
625	630	635
		640
Met Thr Ser Ile Arg Ser Phe Ala Arg Arg Leu Leu Gln Glu Asn Pro		
645	650	655
Glu Ile His Leu Leu Val Asn Asn Ala Gly Val Ser Gly Phe Arg Arg		

660	665	670
His Leu Pro Gln Gly Ala Trp Ile Ser Pro Leu Ser Leu Thr Met Leu		
675	680	685
Gly Pro Phe Cys Ser Gln Ile Tyr Ser Lys Asp Leu Lys Gln Gly Val		
690	695	700
Leu Pro Val Leu Tyr Leu Ser Leu Ala Glu Glu Pro Gly Gly Ile Ser		
705	710	715
Gly Lys Tyr Phe Ser Ser Ser Cys Val Ile Thr Leu Pro Val Lys Ala		
725	730	735
Ser Arg Asp Pro His Val Ala Gln Ser Leu Trp Asn Ala Ser Val Arg		
740	745	750
Leu Thr Ser Leu Val Lys Met Asp		
755	760	

<210> 109

<211> 2077

<212> DNA

<213> Homo sapiens

<400> 109

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<210> 110  
 <211> 659  
 <212> PRT  
 <213> Homo sapiens

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<400> 110
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Gly Ile Gly Ala Ala Val Ala Arg Ala Leu Val Gln Gln Gly Leu Lys
          20             25            30

Val Val Gly Cys Ala Arg Thr Val Gly Asn Ile Glu Glu Leu Ala Ala
      35             40            45

Glu Cys Lys Ser Ala Gly Tyr Pro Gly Thr Leu Ile Pro Tyr Arg Cys
      50             55            60

Asp Leu Ser Asn Glu Glu Asp Ile Leu Ser Met Phe Ser Ala Ile Arg
      65             70            75            80

Ser Gln His Ser Gly Val Asp Ile Cys Ile Asn Asn Ala Gly Leu Ala
          85             90            95

Arg Pro Asp Thr Leu Leu Ser Gly Ser Thr Ser Gly Trp Lys Asp Met
          100            105           110

Phe Asn Val Asn Val Leu Ala Leu Ser Ile Cys Thr Arg Glu Ala Tyr
          115            120           125

Gln Ser Met Lys Glu Arg Asn Val Asp Asp Gly His Ile Ile Asn Ile
          130            135           140

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Asn Ser Met Ser Gly His Arg Val Leu Pro Leu Ser Val Thr His Phe  
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 Arg Arg Glu Glu Ala Ala Ala Gly Tyr Gln Ala Ala Ile Thr Val Lys  
 195 200 205  
 Leu Gly Phe Cys Gly Leu His Pro Leu Pro Ser Thr Ser Pro Arg Pro  
 210 215 220  
 Gly Lys Ala Gln Pro Leu Arg Arg Pro Ser Leu Leu Ala Gln Cys Ile  
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 Ser Pro Gly Val Val Glu Thr Gln Phe Ala Phe Lys Leu His Asp Lys  
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 355 360 365  
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 385 390 395 400

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 Cys Met Glu Val Ser Pro Leu Arg Pro Arg Pro Trp Arg Glu Ala Gly  
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 500 505 510  
 Phe Leu Gly Val Asp Lys Thr Lys Ala Gln Gln Gly Trp Leu Val Ala  
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 Gly Thr Val Gly Cys Pro Ser Thr Glu Asp Pro Gln Ser Ser Glu Ile  
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 545 550 555 560  
 Val Leu Gly Asn Glu Gly Ser Gly Leu Ser Gln Glu Val Gln Ala Ser  
 565 570 575  
 Cys Gln Leu Leu Leu Thr Ile Leu Pro Arg Arg Gln Leu Pro Pro Gly  
 580 585 590  
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 595 600 605  
 Ile Cys Ser Gln Arg Lys Gly Phe Pro Thr Glu Gly Glu Arg Arg Gln  
 610 615 620  
 Leu Leu Gln Asp Pro Gln Glu Pro Ser Ala Arg Ser Glu Gly Leu Ser  
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Asn Glu Gly

<210> 111

<211> 3010

<212> DNA

<213> Homo sapiens

<400> 111

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ccgtgctggt ctccgacgtc aatgacaacg ccccgccctt cacccaaata tcctacaccc 1800
tgttcgtccg cgagaacaac agccccgccc tgacatcgg cagtgtcagc gccacagaca 1860
gagactcagg caccaacgcc caggtaacct actcgctgct gccgcccag gaccgcacc 1920
tgcccccttc ttccctggtc tccatcaacg cggacaacgg ccacctgttt gccctcagg 1980
cgctggacta cgaggccctg caggcgttcg agttccgcgt gggcgccaca gaccgtggct 2040
ccccggcttt gagcagcgag gcgctggtgc gcgtgctggt gctggacgcc aacgacaact 2100
cgcccttcgt gctgtacccg ctgcagaacg gctccgcgcc ctgcaccgag ctggtgcccc 2160
gggcggctga gccgggctac ctggtgacca aggtggtggc ggtggacggc gactcggggc 2220
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agaacgcctg gctgtcgtac cagctgctca aggccacgga gcccgggctg ttcggcgtgt 2280
gggcgcacaa tggcgaagtg cgcaccgcca ggctgctgag ggagcgcgac gctgccaagc 2340
agaggctggt ggtgctggtc aaggacaatg gcgagcctcc gcgctcggcc accgccacgc 2400
tgcacgtgct cctgggtggac ggcttctccc agccctacct gctgctcccg gaggcggcac 2460
cggcccaggc ccaggccgac ttgctcaccg tctacctggt ggtggcgttg gcctcggtgt 2520
cttcgctctt cctcttctcg gtgctcctgt tcgtggcggg gcggtgtgc aggaggagca 2580
gggcggcctc ggtgggtcgc tgctcgggtc ccgagggccc cttccaggg cagatggtgg 2640
acgtgagcgg caccgggacc ctgtcccaga gctaccagta cgaggtgtgt ctgactggag 2700
gctccgggac aaatgagttc aagttcctga agccaattat cccaacttc gttgctcagg 2760
gtgcagagag ggtagcgag gcaaatccca gtttcaggaa gagctttgaa ttcacttaag 2820
tgtaataag gatctactga ggctagtctc gtttaatttg tgaaagtcc tttttactg 2880
ctttgcccat tggaggtgtc tccttttatt agaaagtaac catcttattc caattctatg 2940
catgttactg gtatttataa atgtatgagt ttttttgcgg tataataaat gtaaattttc 3000
tttgatttct                                     3010

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<210> 112

<211> 796

<212> PRT

<213> Homo sapiens

<400> 112

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Met Glu Ala Gly Gly Glu Arg Phe Leu Arg Gln Arg Gln Val Leu Leu
  1                   5                   10                   15

Leu Phe Val Phe Leu Gly Gly Ser Leu Ala Gly Ser Glu Ser Arg Arg
                   20                   25                   30

Tyr Ser Val Ala Glu Glu Lys Glu Lys Gly Phe Leu Ile Ala Asn Leu
                   35                   40                   45

Ala Lys Asp Leu Gly Leu Arg Val Glu Glu Leu Ala Ala Arg Gly Ala
                   50                   55                   60

Gln Val Val Ser Lys Gly Asn Lys Gln His Phe Gln Leu Ser His Gln
                   65                   70                   75                   80

Thr Gly Asp Leu Leu Leu Asn Glu Lys Leu Asp Arg Glu Glu Leu Cys
                   85                   90                   95

Gly Pro Thr Glu Pro Cys Ile Leu His Phe Gln Ile Leu Leu Gln Asn
                   100                  105                  110

Pro Leu Gln Phe Val Thr Asn Glu Leu Arg Ile Ile Asp Val Asn Asp
                   115                  120                  125

His Ser Pro Val Phe Phe Glu Asn Glu Met His Leu Lys Ile Leu Glu
                   130                  135                  140

```

Ser Thr Leu Pro Gly Thr Val Ile Pro Leu Gly Asn Ala Glu Asp Leu  
 145 150 155 160  
 Asp Val Gly Arg Asn Ser Leu Gln Asn Tyr Thr Ile Thr Pro Asn Ser  
 165 170 175  
 His Phe His Val Pro Thr Arg Ser Arg Arg Asp Gly Arg Lys Tyr Pro  
 180 185 190  
 Glu Leu Val Leu Asn Arg Ala Leu Asp Arg Glu Glu Gln Pro Glu Ile  
 195 200 205  
 Arg Leu Thr Leu Thr Ala Leu Asp Gly Gly Ser Pro Pro Arg Ser Gly  
 210 215 220  
 Thr Ala Leu Val Arg Ile Glu Val Val Asp Ile Asn Asp Asn Val Pro  
 225 230 235 240  
 Glu Phe Ala Lys Leu Leu Tyr Glu Val Gln Ile Pro Glu Asp Ser Pro  
 245 250 255  
 Val Gly Ser Gln Val Ala Ile Val Ser Ala Arg Asp Leu Asp Ile Gly  
 260 265 270  
 Thr Asn Gly Glu Ile Ser Tyr Ala Phe Ser Gln Ala Ser Glu Asp Ile  
 275 280 285  
 Arg Lys Thr Phe Arg Leu Ser Ala Lys Ser Gly Glu Leu Leu Leu Arg  
 290 295 300  
 Gln Lys Leu Asp Phe Glu Ser Ile Gln Thr Tyr Thr Val Asn Ile Gln  
 305 310 315 320  
 Ala Thr Asp Gly Gly Gly Leu Ser Gly Lys Ser Thr Val Ile Val Gln  
 325 330 335  
 Val Val Asp Val Asn Asp Asn Pro Pro Glu Leu Thr Leu Ser Ser Val  
 340 345 350  
 Asn Ser Pro Ile Pro Glu Asn Ser Gly Glu Thr Val Leu Ala Val Phe  
 355 360 365  
 Ser Val Ser Asp Leu Asp Ser Gly Asp Asn Gly Arg Val Met Cys Ser  
 370 375 380  
 Ile Glu Asn Asn Leu Pro Phe Phe Leu Lys Pro Ser Val Glu Asn Phe  
 385 390 395 400



Tyr Thr Leu Val Ser Glu Gly Ala Leu Asp Arg Glu Thr Arg Ser Glu  
 405 410 415  
 Tyr Asn Ile Thr Ile Thr Ile Thr Asp Leu Gly Thr Pro Arg Leu Lys  
 420 425 430  
 Thr Lys Tyr Asn Ile Thr Val Leu Val Ser Asp Val Asn Asp Asn Ala  
 435 440 445  
 Pro Ala Phe Thr Gln Ile Ser Tyr Thr Leu Phe Val Arg Glu Asn Asn  
 450 455 460  
 Ser Pro Ala Leu His Ile Gly Ser Val Ser Ala Thr Asp Arg Asp Ser  
 465 470 475 480  
 Gly Thr Asn Ala Gln Val Thr Tyr Ser Leu Leu Pro Pro Gln Asp Pro  
 485 490 495  
 His Leu Pro Leu Ser Ser Leu Val Ser Ile Asn Ala Asp Asn Gly His  
 500 505 510  
 Leu Phe Ala Leu Arg Ser Leu Asp Tyr Glu Ala Leu Gln Ala Phe Glu  
 515 520 525  
 Phe Arg Val Gly Ala Thr Asp Arg Gly Ser Pro Ala Leu Ser Ser Glu  
 530 535 540  
 Ala Leu Val Arg Val Leu Val Leu Asp Ala Asn Asp Asn Ser Pro Phe  
 545 550 555 560  
 Val Leu Tyr Pro Leu Gln Asn Gly Ser Ala Pro Cys Thr Glu Leu Val  
 565 570 575  
 Pro Arg Ala Ala Glu Pro Gly Tyr Leu Val Thr Lys Val Val Ala Val  
 580 585 590  
 Asp Gly Asp Ser Gly Gln Asn Ala Trp Leu Ser Tyr Gln Leu Leu Lys  
 595 600 605  
 Ala Thr Glu Pro Gly Leu Phe Gly Val Trp Ala His Asn Gly Glu Val  
 610 615 620  
 Arg Thr Ala Arg Leu Leu Arg Glu Arg Asp Ala Ala Lys Gln Arg Leu  
 625 630 635 640  
 Val Val Leu Val Lys Asp Asn Gly Glu Pro Pro Arg Ser Ala Thr Ala  
 645 650 655

Thr Leu His Val Leu Leu Val Asp Gly Phe Ser Gln Pro Tyr Leu Leu  
 660 665 670  
 Leu Pro Glu Ala Ala Pro Ala Gln Ala Gln Ala Asp Leu Leu Thr Val  
 675 680 685  
 Tyr Leu Val Val Ala Leu Ala Ser Val Ser Ser Leu Phe Leu Phe Ser  
 690 695 700  
 Val Leu Leu Phe Val Ala Val Arg Leu Cys Arg Arg Ser Arg Ala Ala  
 705 710 715 720  
 Ser Val Gly Arg Cys Ser Val Pro Glu Gly Pro Phe Pro Gly Gln Met  
 725 730 735  
 Val Asp Val Ser Gly Thr Gly Thr Leu Ser Gln Ser Tyr Gln Tyr Glu  
 740 745 750  
 Val Cys Leu Thr Gly Gly Ser Gly Thr Asn Glu Phe Lys Phe Leu Lys  
 755 760 765  
 Pro Ile Ile Pro Asn Phe Val Ala Gln Gly Ala Glu Arg Val Ser Glu  
 770 775 780  
 Ala Asn Pro Ser Phe Arg Lys Ser Phe Glu Phe Thr  
 785 790 795

<210> 113  
 <211> 261  
 <212> PRT  
 <213> Homo sapiens

<400> 113  
 Met Ile Tyr Lys Cys Pro Met Cys Arg Glu Phe Phe Ser Glu Arg Ala  
 1 5 10 15  
 Asp Leu Phe Met His Gln Lys Val His Thr Ala Glu Lys Pro His Lys  
 20 25 30  
 Cys Asp Lys Cys Asp Lys Gly Phe Phe His Ile Ser Glu Leu His Ile  
 35 40 45  
 His Trp Arg Asp His Thr Gly Glu Lys Val Tyr Lys Cys Asp Asp Cys  
 50 55 60  
 Gly Lys Asp Phe Ser Thr Thr Thr Lys Leu Asn Arg His Lys Lys Ile



Phe Phe His Ile Ser Glu Leu His Ile His Trp Arg Asp His Thr Gly  
                   20                                  25                                  30  
 Glu Lys Val Tyr Lys Cys Asp Asp Cys Gly Lys Asp Phe Ser Thr Thr  
                   35                                  40                                  45  
 Thr Lys Leu Asn Arg His Lys Lys Ile His Thr Val Glu Lys Pro Tyr  
                   50                                  55                                  60  
 Lys Cys Tyr Glu Cys Gly Lys Ala Phe Asn Trp Ser Ser His Leu Gln  
                   65                                  70                                  75                                  80  
 Ile His Met Arg Val His Thr Gly Glu Glu Pro Tyr Val Cys Ser Glu  
                                   85                                  90                                  95  
 Cys Gly Arg Gly Phe Ser Asn Ser Ser Asn Leu Cys Met His Gln Arg  
                                   100                                  105                                  110  
 Val His Thr Gly Glu Lys Pro Phe Lys Cys Glu Glu Cys Gly Lys Ala  
                   115                                  120                                  125  
 Phe Arg His Thr Ser Ser Leu Cys Met His Gln Arg Val His Thr Gly  
                   130                                  135                                  140  
 Glu Lys Pro Tyr Lys Cys Tyr Glu Cys Gly Lys Ala Phe Ser Gln Arg  
                   145                                  150                                  155                                  160  
 Ser Ser Leu Cys Ile His Gln Arg Val His Thr Gly Glu Lys Pro Tyr  
                                   165                                  170                                  175  
 Arg Cys Cys Gly Cys Gly Lys Ala  
                                   180

<210> 115  
 <211> 183  
 <212> PRT  
 <213> Homo sapiens

<400> 115  
 Val His Thr Ala Glu Lys Pro His Lys Cys Asp Lys Cys Asp Lys Gly  
   1                                  5                                  10                                  15  
 Phe Phe His Ile Ser Glu Leu His Ile His Trp Arg Asp His Thr Gly  
                   20                                  25                                  30  
 Glu Lys Val Tyr Lys Cys Asp Asp Cys Gly Lys Asp Phe Ser Thr Thr  
                   35                                  40                                  45

Thr Lys Leu Asn Arg His Lys Lys Ile His Thr Val Glu Lys Pro Tyr  
 50 55 60  
 Lys Cys Tyr Glu Cys Gly Lys Ala Phe Asn Trp Ser Ser His Leu Gln  
 65 70 75 80  
 Ile His Met Arg Val His Thr Gly Glu Glu Pro Tyr Val Cys Ser Glu  
 85 90 95  
 Cys Gly Arg Gly Phe Ser Asn Ser Ser Asn Leu Cys Met His Gln Arg  
 100 105 110  
 Val His Thr Gly Glu Lys Pro Phe Lys Cys Glu Glu Cys Gly Lys Ala  
 115 120 125  
 Phe Arg His Thr Ser Ser Leu Cys Met His Gln Arg Val His Thr Gly  
 130 135 140  
 Glu Lys Pro Tyr Lys Cys Tyr Glu Cys Gly Lys Ala Phe Ser Gln Arg  
 145 150 155 160  
 Ser Ser Leu Cys Ile His Gln Arg Val His Thr Gly Glu Lys Pro Tyr  
 165 170 175  
 Arg Cys Cys Gly Cys Gly Lys  
 180

<210> 116  
 <211> 1147  
 <212> PRT  
 <213> Homo sapiens

<400> 116  
 Met Pro Val Lys Lys Gly Cys Gln Gly Pro Pro Lys Gly Met Leu Arg  
 1 5 10 15  
 Pro Cys Val Pro Gly Phe Ser Val Cys Ala Ser Gln Ser Leu Ile Ser  
 20 25 30  
 Pro Ala Glu Val Pro Gly Leu Arg Trp Ala Cys Leu Gln Glu Gln Leu  
 35 40 45  
 Val Leu Gly Ser Gly Asn Ser Val Glu Leu Ser Cys His Pro Pro Gly  
 50 55 60  
 Arg Gly Pro Met Glu Leu Thr Val Gly Val Lys Gly Ser Ala Gly Leu





580	585	590
Glu Gln Val His Phe Thr Leu Phe Ser Trp Ser Gln Ile Lys Asn Ser		
595	600	605
Ala His Gly Thr Phe Cys Lys Tyr Gly Leu Leu Ala Phe Ser Asp Val		
610	615	620
Val Ile Glu Phe Ser Pro Glu Glu Trp Ala Cys Leu Asp Pro Ala Gln		
625	630	635
Arg Asn Leu Tyr Arg Asp Val Met Phe Glu Asn Tyr Arg Asn Leu Val		
	645	650
		655
Ser Leu Asp Leu Leu Pro Glu Gln Asp Met Lys Asp Leu Cys Gln Lys		
	660	665
		670
Val Thr Leu Thr Arg His Arg Ser Trp Gly Leu Asp Asn Leu His Leu		
	675	680
		685
Val Lys Asp Trp Arg Thr Val Asn Glu Gly Lys Gly Gln Lys Glu Tyr		
	690	695
		700
Cys Asn Arg Leu Thr Gln Cys Ser Ser Thr Lys Ser Lys Ile Phe Gln		
705	710	715
		720
Cys Ile Glu Cys Gly Arg Asn Phe Ser Trp Arg Ser Ile Leu Thr Glu		
	725	730
		735
His Lys Arg Ile His Thr Gly Glu Lys Pro Tyr Lys Cys Glu Glu Cys		
	740	745
		750
Gly Lys Val Phe Asn Arg Cys Ser Asn Leu Thr Lys His Lys Arg Ile		
	755	760
		765
His Thr Gly Glu Lys Pro Tyr Lys Cys Asp Glu Cys Gly Lys Val Phe		
	770	775
		780
Asn Trp Trp Ser Gln Leu Thr Asn His Lys Lys Ile His Thr Gly Glu		
785	790	795
		800
Lys Pro Tyr Lys Cys Asp Glu Cys Asp Lys Val Phe Asn Trp Trp Ser		
	805	810
		815
Gln Leu Thr Ser His Lys Lys Ile His Ser Gly Glu Lys Pro Tyr Pro		
	820	825
		830
Cys Glu Glu Cys Gly Lys Ala Phe Thr Gln Phe Ser Asn Leu Thr Gln		



835	840	845
His Lys Arg Ile His Thr Gly Glu Lys Pro Tyr Lys Cys Lys Glu Cys		
850	855	860
Cys Lys Ala Phe Asn Lys Phe Ser Asn Leu Thr Gln His Lys Arg Ile		
865	870	875 880
His Thr Gly Glu Lys Pro Tyr Lys Cys Glu Glu Cys Gly Asn Val Phe		
	885	890 895
Asn Glu Cys Ser His Leu Thr Arg His Arg Arg Ile His Thr Gly Glu		
	900	905 910
Lys Pro Tyr Lys Cys Glu Glu Cys Gly Lys Ala Phe Thr Gln Phe Ala		
	915	920 925
Ser Leu Thr Arg His Lys Arg Ile His Thr Gly Glu Lys Pro Tyr Gln		
	930	935 940
Cys Glu Glu Cys Gly Lys Thr Phe Asn Arg Cys Ser His Leu Ser Ser		
	945	950 955 960
His Lys Arg Ile His Thr Gly Glu Lys Pro Tyr Lys Cys Glu Glu Cys		
	965	970 975
Gly Arg Thr Phe Thr Gln Phe Ser Asn Leu Thr Gln His Lys Arg Ile		
	980	985 990
His Thr Gly Glu Lys Pro Tyr Lys Cys Lys Glu Cys Gly Lys Ala Phe		
	995	1000 1005
Asn Lys Phe Ser Ser Leu Thr Gln His Arg Arg Ile His Thr Gly Val		
	1010	1015 1020
Lys Pro Tyr Lys Cys Glu Glu Cys Gly Lys Val Phe Lys Gln Cys Ser		
	1025	1030 1035 1040
His Leu Thr Ser His Lys Arg Ile His Thr Gly Glu Lys Pro Tyr Lys		
	1045	1050 1055
Cys Lys Glu Cys Gly Lys Ala Phe Tyr Gln Ser Ser Ile Leu Ser Lys		
	1060	1065 1070
His Lys Arg Ile His Thr Glu Glu Lys Pro Tyr Lys Cys Glu Glu Cys		
	1075	1080 1085
Gly Lys Ala Phe Asn Gln Phe Ser Ser Leu Thr Arg His Lys Arg Ile		

1090	1095	1100
His Thr Gly Glu Lys Arg Tyr Lys Cys Lys Glu Cys Gly Lys Gly Phe		
1105	1110	1115 1120
Tyr Gln Ser Ser Ile His Ser Lys Tyr Lys Arg Ile Tyr Thr Gly Glu		
	1125	1130 1135
Glu Pro Asp Lys Cys Lys Lys Cys Gly Ser Leu		
	1140	1145
<210> 117		
<211> 606		
<212> PRT		
<213> Homo sapiens		
<400> 117		
Met Ala Val Thr Phe Glu Asp Val Thr Ile Ile Phe Thr Trp Glu Glu		
1	5	10 15
Trp Lys Phe Leu Asp Ser Ser Gln Lys Arg Leu Tyr Arg Glu Val Met		
	20	25 30
Trp Glu Asn Tyr Thr Asn Val Met Ser Val Glu Asn Trp Asn Glu Ser		
	35	40 45
Tyr Lys Ser Gln Glu Glu Lys Phe Arg Tyr Leu Glu Tyr Glu Asn Phe		
	50	55 60
Ser Tyr Trp Gln Gly Trp Trp Asn Ala Gly Ala Gln Met Tyr Glu Asn		
	65	70 75 80
Gln Asn Tyr Gly Glu Thr Val Gln Gly Thr Asp Ser Lys Asp Leu Thr		
	85	90 95
Gln Gln Asp Arg Ser Gln Cys Gln Glu Trp Leu Ile Leu Ser Thr Gln		
	100	105 110
Val Pro Gly Tyr Gly Asn Tyr Glu Leu Thr Phe Glu Ser Lys Ser Leu		
	115	120 125
Arg Asn Leu Lys Tyr Lys Asn Phe Met Pro Trp Gln Ser Leu Glu Thr		
	130	135 140
Lys Thr Thr Gln Asp Tyr Gly Arg Glu Ile Tyr Met Ser Gly Ser His		
	145	150 155 160

Gly Phe Gln Gly Gly Arg Tyr Arg Leu Gly Ile Ser Arg Lys Asn Leu  
 165 170 175  
 Ser Met Glu Lys Glu Gln Lys Leu Ile Val Gln His Ser Tyr Ile Pro  
 180 185 190  
 Val Glu Glu Ala Leu Pro Gln Tyr Val Gly Val Ile Cys Gln Glu Asp  
 195 200 205  
 Leu Leu Arg Asp Ser Met Glu Glu Lys Tyr Cys Gly Cys Asn Lys Cys  
 210 215 220  
 Lys Gly Ile Tyr Tyr Trp Asn Ser Arg Cys Val Phe His Lys Arg Asn  
 225 230 235 240  
 Gln Pro Gly Glu Asn Leu Cys Gln Cys Ser Ile Arg Lys Ala Cys Phe  
 245 250 255  
 Ser Gln Arg Ser Asp Leu Tyr Arg His Pro Arg Asn His Ile Gly Lys  
 260 265 270  
 Lys Leu Tyr Gly Cys Asp Glu Val Asp Gly Asn Phe His Gln Ser Ser  
 275 280 285  
 Gly Val His Phe His Gln Arg Val His Ile Gly Glu Val Pro Tyr Ser  
 290 295 300  
 Cys Asn Ala Cys Gly Lys Ser Phe Ser Gln Ile Ser Ser Leu His Asn  
 305 310 315 320  
 His Gln Arg Val His Thr Glu Glu Lys Phe Tyr Lys Ile Glu Cys Asp  
 325 330 335  
 Lys Asp Leu Ser Arg Asn Ser Leu Leu His Ile His Gln Arg Leu His  
 340 345 350  
 Ile Gly Glu Lys Pro Phe Lys Cys Asn Gln Cys Gly Lys Ser Phe Asn  
 355 360 365  
 Arg Ser Ser Val Leu His Val His Gln Arg Val His Thr Gly Glu Lys  
 370 375 380  
 Pro Tyr Lys Cys Asp Glu Cys Gly Lys Gly Phe Ser Gln Ser Ser Asn  
 385 390 395 400  
 Leu Arg Ile His Gln Leu Val His Thr Gly Glu Lys Ser Tyr Lys Cys  
 405 410 415

Glu Asp Cys Gly Lys Gly Phe Thr Gln Arg Ser Asn Leu Gln Ile His  
                   420                                  425                                  430  
 Gln Arg Val His Thr Gly Glu Lys Pro Tyr Lys Cys Asp Asp Cys Gly  
                   435                                  440                                  445  
 Lys Asp Phe Ser His Ser Ser Asp Leu Arg Ile His Gln Arg Val His  
                   450                                  455                                  460  
 Thr Gly Glu Lys Pro Tyr Thr Cys Pro Glu Cys Gly Lys Gly Phe Ser  
                   465                                  470                                  475                                  480  
 Lys Ser Ser Lys Leu His Thr His Gln Arg Val His Thr Gly Glu Lys  
                                   485                                  490                                  495  
 Pro Tyr Lys Cys Glu Glu Cys Gly Lys Gly Phe Ser Gln Arg Ser His  
                                   500                                  505                                  510  
 Leu Leu Ile His Gln Arg Val His Thr Gly Glu Lys Pro Tyr Lys Cys  
                                   515                                  520                                  525  
 His Asp Cys Gly Lys Gly Phe Ser His Ser Ser Asn Leu His Ile His  
                   530                                  535                                  540  
 Gln Arg Val His Thr Gly Glu Lys Pro Tyr Gln Cys Ala Lys Cys Gly  
                   545                                  550                                  555                                  560  
 Lys Gly Phe Ser His Ser Ser Ala Leu Arg Ile His Gln Arg Val His  
                                   565                                  570                                  575  
 Ala Gly Glu Lys Pro Tyr Lys Cys Arg Glu Tyr Tyr Lys Gly Phe Asp  
                                   580                                  585                                  590  
 His Asn Ser His Leu His Asn Asn His Arg Arg Gly Asn Leu  
                   595                                  600                                  605

<210> 118

<211> 24

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: zinc finger  
                   C2H2 consensus pattern sequence

<400> 118

Tyr Lys Cys Pro Phe Asp Cys Gly Lys Ser Phe Ser Arg Lys Ser Asn

1	5	10	15
---	---	----	----

Leu Lys Arg His Leu Arg Thr His  
20

<210> 119  
<211> 23  
<212> PRT  
<213> Homo sapiens

<400> 119  
Tyr Lys Cys Pro Met Cys Arg Glu Phe Phe Ser Glu Arg Ala Asp Leu  
1 5 10 15

Phe Met His Gln Lys Ile His  
20

<210> 120  
<211> 23  
<212> PRT  
<213> Homo sapiens

<400> 120  
His Lys Cys Asp Lys Cys Asp Lys Gly Phe Phe His Ile Ser Glu Leu  
1 5 10 15

His Ile His Trp Arg Asp His  
20

<210> 121  
<211> 23  
<212> PRT  
<213> Homo sapiens

<400> 121  
Tyr Lys Cys Asp Asp Cys Gly Lys Asp Phe Ser Thr Thr Thr Lys Leu  
1 5 10 15

Asn Arg His Lys Lys Ile His  
20

<210> 122  
<211> 23  
<212> PRT

<213> Homo sapiens

<400> 122

Tyr Lys Cys Tyr Glu Cys Gly Lys Ala Phe Asn Trp Ser Ser His Leu  
1 5 10 15

Gln Ile His Met Arg Val His  
20

<210> 123

<211> 23

<212> PRT

<213> Homo sapiens

<400> 123

Tyr Val Cys Ser Glu Cys Gly Arg Gly Phe Ser Asn Ser Ser Asn Leu  
1 5 10 15

Cys Met His Gln Arg Val His  
20

<210> 124

<211> 23

<212> PRT

<213> Homo sapiens

<400> 124

Phe Lys Cys Glu Glu Cys Gly Lys Ala Phe Arg His Thr Ser Ser Leu  
1 5 10 15

Cys Met His Gln Arg Val His  
20

<210> 125

<211> 23

<212> PRT

<213> Homo sapiens

<400> 125

Tyr Lys Cys Tyr Glu Cys Gly Lys Ala Phe Ser Gln Ser Ser Ser Leu  
1 5 10 15

Cys Ile His Gln Arg Val His  
20

<210> 126  
 <211> 23  
 <212> PRT  
 <213> Homo sapiens

<400> 126  
 Tyr Arg Cys Cys Gly Cys Gly Lys Ala Phe Ser Gln Ser Ser Gly Leu  
 1 5 10 15  
 Cys Ile His Gln Arg Val His  
 20

<210> 127  
 <211> 23  
 <212> PRT  
 <213> Homo sapiens

<400> 127  
 Phe Lys Cys Asp Glu Cys Gly Lys Ala Phe Ser Gln Ser Thr Ser Leu  
 1 5 10 15  
 Cys Ile His Gln Arg Val His  
 20

<210> 128  
 <211> 388  
 <212> PRT  
 <213> Homo sapiens

<400> 128  
 Met Lys Trp Leu Leu Leu Leu Gly Leu Val Ala Leu Ser Glu Cys Ile  
 1 5 10 15  
 Met Tyr Lys Val Pro Leu Ile Arg Lys Lys Ser Leu Arg Arg Thr Leu  
 20 25 30  
 Ser Glu Arg Gly Leu Leu Lys Asp Phe Leu Lys Lys His Asn Leu Asn  
 35 40 45  
 Pro Ala Arg Lys Tyr Phe Pro Gln Trp Glu Ala Pro Thr Leu Val Asp  
 50 55 60  
 Glu Gln Pro Leu Glu Asn Tyr Leu Asp Met Glu Tyr Phe Gly Thr Ile  
 65 70 75 80





Ile Leu Gln Ser Glu Gly Ser Cys Ile Ser Gly Phe Gln Gly Met Asn  
340 345 350

Leu Pro Thr Glu Ser Gly Glu Leu Trp Ile Leu Gly Asp Val Phe Ile  
355 360 365

Arg Gln Tyr Phe Thr Val Phe Asp Arg Ala Asn Asn Gln Val Gly Leu  
370 375 380

Ala Pro Val Ala  
385

<210> 129

<211> 388

<212> PRT

<213> Homo sapiens

<400> 129

Met Lys Trp Leu Leu Leu Gly Leu Val Ala Leu Ser Glu Cys Ile  
1 5 10 15

Met Tyr Lys Val Pro Leu Ile Arg Lys Lys Ser Leu Arg Arg Thr Leu  
20 25 30

Ser Glu Arg Gly Leu Leu Lys Asp Phe Leu Lys Lys His Asn Leu Asn  
35 40 45

Pro Ala Arg Lys Tyr Phe Pro Gln Trp Lys Ala Pro Thr Leu Val Asp  
50 55 60

Glu Gln Pro Leu Glu Asn Tyr Leu Asp Met Glu Tyr Phe Gly Thr Ile  
65 70 75 80

Gly Ile Gly Thr Pro Ala Gln Asp Phe Thr Val Leu Phe Asp Thr Gly  
85 90 95

Ser Ser Asn Leu Trp Val Pro Ser Val Tyr Cys Ser Ser Leu Ala Cys  
100 105 110

Thr Asn His Asn Arg Phe Asn Pro Glu Asp Ser Ser Thr Tyr Gln Ser  
115 120 125

Thr Ser Glu Thr Val Ser Ile Thr Tyr Gly Thr Gly Ser Met Thr Gly  
130 135 140

Ile Leu Gly Tyr Asp Thr Val Gln Val Gly Gly Ile Ser Asp Thr Asn  
145 150 155 160

Gln Ile Phe Gly Leu Ser Glu Thr Glu Pro Gly Ser Phe Leu Tyr Tyr  
                   165                                  170                                  175  
 Ala Pro Phe Asp Gly Ile Leu Gly Leu Ala Tyr Pro Ser Ile Ser Ser  
                   180                                  185                                  190  
 Ser Gly Ala Thr Pro Val Phe Asp Asn Ile Trp Asn Gln Gly Leu Val  
                   195                                  200                                  205  
 Ser Gln Asp Leu Phe Ser Val Tyr Leu Ser Ala Asp Asp Gln Ser Gly  
                   210                                  215                                  220  
 Ser Val Val Ile Phe Gly Gly Ile Asp Ser Ser Tyr Tyr Thr Gly Ser  
                   225                                  230                                  235                                  240  
 Leu Asn Trp Val Pro Val Thr Val Glu Gly Tyr Trp Gln Ile Thr Val  
                   245                                  250                                  255  
 Asp Ser Ile Thr Met Asn Gly Glu Ala Ile Ala Cys Ala Glu Gly Cys  
                   260                                  265                                  270  
 Gln Ala Ile Val Asp Thr Gly Thr Ser Leu Leu Thr Gly Pro Thr Ser  
                   275                                  280                                  285  
 Pro Ile Ala Asn Ile Gln Ser Asp Ile Gly Ala Ser Glu Asn Ser Asp  
                   290                                  295                                  300  
 Gly Asp Met Val Val Ser Cys Ser Ala Ile Ser Ser Leu Pro Asp Ile  
                   305                                  310                                  315                                  320  
 Val Phe Thr Ile Asn Gly Val Gln Tyr Pro Val Pro Pro Ser Ala Tyr  
                   325                                  330                                  335  
 Ile Leu Gln Ser Glu Gly Ser Cys Ile Ser Gly Phe Gln Gly Met Asn  
                   340                                  345                                  350  
 Leu Pro Thr Glu Ser Gly Glu Leu Trp Ile Leu Gly Asp Val Phe Ile  
                   355                                  360                                  365  
 Arg Gln Tyr Phe Thr Val Phe Glu Arg Ala Asn Asn Gln Val Gly Leu  
                   370                                  375                                  380  
 Ala Pro Val Ala  
                   385

<210> 130

<211> 388

<212> PRT

<213> Homo sapiens

<400> 130

Met Lys Trp Leu Leu Leu Leu Gly Leu Val Ala Leu Ser Glu Cys Ile  
1 5 10 15

Met Tyr Lys Val Pro Leu Ile Arg Lys Lys Ser Phe Arg Arg Thr Leu  
20 25 30

Ser Glu Arg Gly Leu Leu Lys Asp Phe Leu Lys Lys His Asn Leu Asn  
35 40 45

Pro Ala Arg Lys Tyr Phe Pro Gln Trp Lys Ala Pro Thr Leu Val Asp  
50 55 60

Glu Gln Pro Leu Glu Asn Tyr Leu Asp Met Glu Tyr Phe Gly Thr Ile  
65 70 75 80

Gly Ile Gly Thr Pro Ala Gln Asp Phe Thr Val Leu Phe Asp Thr Gly  
85 90 95

Ser Ser Asn Leu Trp Val Pro Ser Val Tyr Cys Ser Ser Leu Ala Cys  
100 105 110

Thr Asn His Asn Arg Phe Asn Pro Glu Asp Ser Ser Thr Tyr Gln Ser  
115 120 125

Thr Ser Glu Thr Val Ser Ile Thr Tyr Gly Thr Gly Ser Met Thr Gly  
130 135 140

Ile Leu Gly Tyr Asp Thr Val Gln Val Gly Gly Ile Ser Asp Thr Asn  
145 150 155 160

Gln Ile Phe Gly Leu Ser Glu Thr Glu Pro Gly Ser Phe Leu Tyr Tyr  
165 170 175

Ala Pro Phe Asp Gly Ile Leu Gly Leu Ala Tyr Pro Ser Ile Ser Ser  
180 185 190

Ser Gly Ala Thr Pro Val Phe Asp Asn Ile Trp Asn Gln Gly Leu Val  
195 200 205

Ser Gln Asp Leu Phe Ser Val Tyr Leu Ser Ala Asp Asp Gln Ser Gly  
210 215 220

Ser Val Val Ile Phe Gly Gly Ile Asp Ser Ser Tyr Tyr Thr Gly Ser

225                      230                      235                      240  
 Leu Asn Trp Val Pro Val Thr Val Glu Gly Tyr Trp Gln Ile Thr Val  
                                  245                      250                      255  
 Asp Ser Ile Thr Met Asn Gly Glu Ala Ile Ala Cys Ala Glu Gly Cys  
                                  260                      265                      270  
 Gln Ala Ile Val Asp Thr Gly Thr Ser Leu Leu Thr Gly Pro Thr Ser  
                                  275                      280                      285  
 Pro Ile Ala Asn Ile Gln Ser Asp Ile Gly Ala Ser Glu Asn Ser Asp  
                                  290                      295                      300  
 Gly Asp Met Val Val Ser Cys Ser Ala Ile Ser Ser Leu Pro Asp Ile  
 305                                   310                      315                      320  
 Val Phe Thr Ile Asn Gly Val Gln Tyr Pro Val Pro Pro Ser Ala Tyr  
                                  325                      330                      335  
 Ile Leu Gln Ser Glu Gly Ser Cys Ile Ser Gly Phe Gln Gly Met Asn  
                                  340                      345                      350  
 Leu Pro Thr Glu Ser Gly Glu Leu Trp Ile Leu Gly Asp Val Phe Ile  
                                  355                      360                      365  
 Arg Gln Tyr Phe Thr Val Phe Glu Arg Ala Asn Asn Gln Val Gly Leu  
                                  370                      375                      380  
 Ala Pro Val Ala  
 385

<210> 131  
 <211> 388  
 <212> PRT  
 <213> Homo sapiens

<400> 131  
 Met Lys Trp Leu Leu Leu Leu Gly Leu Val Ala Leu Ser Glu Cys Ile  
   1                      5                      10                      15  
 Met Tyr Lys Val Pro Leu Ile Arg Lys Lys Ser Leu Arg Arg Thr Leu  
                                  20                      25                      30  
 Ser Glu Arg Gly Leu Leu Lys Asp Phe Leu Lys Lys His Asn Leu Asn  
                                  35                      40                      45

Pro Ala Arg Lys Tyr Phe Pro Gln Trp Glu Ala Pro Thr Leu Val Asp  
 50 55 60

Glu Gln Pro Leu Glu Asn Tyr Leu Asp Met Glu Tyr Phe Gly Thr Ile  
 65 70 75 80

Gly Ile Gly Thr Pro Ala Gln Asp Phe Thr Val Leu Phe Asp Thr Gly  
 85 90 95

Ser Ser Asn Leu Trp Val Pro Ser Val Tyr Cys Ser Ser Leu Ala Cys  
 100 105 110

Thr Asn His Asn Arg Phe Asn Pro Glu Asp Ser Ser Thr Tyr Gln Ser  
 115 120 125

Thr Ser Glu Thr Val Ser Ile Thr Tyr Gly Thr Gly Ser Met Thr Gly  
 130 135 140

Ile Leu Gly Tyr Asp Thr Val Gln Val Gly Gly Ile Ser Asp Thr Asn  
 145 150 155 160

Gln Ile Phe Gly Leu Ser Glu Thr Glu Pro Gly Ser Phe Leu Tyr Tyr  
 165 170 175

Ala Pro Phe Asp Gly Ile Leu Gly Leu Ala Tyr Pro Ser Ile Ser Ser  
 180 185 190

Ser Gly Ala Thr Pro Val Phe Asp Asn Ile Trp Asn Gln Gly Leu Val  
 195 200 205

Ser Gln Asp Leu Phe Ser Val Tyr Leu Ser Ala Asp Asp Lys Ser Gly  
 210 215 220

Ser Val Val Ile Phe Gly Gly Ile Asp Ser Ser Tyr Tyr Thr Gly Ser  
 225 230 235 240

Leu Asn Trp Val Pro Val Thr Val Glu Gly Tyr Trp Gln Ile Thr Val  
 245 250 255

Asp Ser Ile Thr Met Asn Gly Glu Thr Ile Ala Cys Ala Glu Gly Cys  
 260 265 270

Gln Ala Ile Val Asp Thr Gly Thr Ser Leu Leu Thr Gly Pro Thr Ser  
 275 280 285

Pro Ile Ala Asn Ile Gln Ser Asp Ile Gly Ala Ser Glu Asn Ser Asp  
 290 295 300

Gly Asp Met Val Val Ser Cys Ser Ala Ile Ser Ser Leu Pro Asp Ile  
305 310 315 320

Val Phe Thr Ile Asn Gly Val Gln Tyr Pro Val Pro Pro Ser Ala Tyr  
325 330 335

Ile Leu Gln Ser Glu Gly Ser Cys Ile Ser Gly Phe Gln Gly Met Asn  
340 345 350

Val Pro Thr Glu Ser Gly Glu Leu Trp Ile Leu Gly Asp Val Phe Ile  
355 360 365

Arg Gln Tyr Phe Thr Val Phe Glu Arg Ala Asn Asn Gln Val Gly Leu  
370 375 380

Ala Pro Val Ala  
385

<210> 132

<211> 328

<212> PRT

<213> *Macaca fuscata*

<400> 132

Met Lys Trp Leu Leu Leu Gly Leu Val Ala Leu Ser Glu Cys Ile  
1 5 10 15

Ile His Lys Val Pro Leu Val Arg Lys Lys Ser Leu Arg Arg Asn Leu  
20 25 30

Ser Glu His Gly Leu Leu Lys Asp Phe Leu Lys Lys His Asn Phe Asn  
35 40 45

Pro Ala Ser Lys Tyr Phe Pro Gln Ala Glu Ala Pro Thr Leu Ile Asp  
50 55 60

Glu Gln Pro Leu Glu Asn Tyr Leu Asp Met Glu Tyr Phe Gly Thr Ile  
65 70 75 80

Gly Ile Gly Thr Pro Ala Gln Asp Phe Thr Val Ile Phe Asp Thr Gly  
85 90 95

Ser Ser Asn Leu Trp Val Pro Ser Val Tyr Cys Ser Ser Leu Ala Cys  
100 105 110

Thr Asn His Asn Arg Phe Asn Pro Gln Asp Ser Ser Thr Tyr Gln Ser  
115 120 125

Thr Ser Gly Thr Val Ser Ile Thr Tyr Gly Thr Gly Ser Met Thr Gly  
 130 135 140  
 Ile Leu Gly Tyr Asp Thr Val Gln Val Gly Gly Ile Ser Asp Thr Asn  
 145 150 155 160  
 Gln Ile Phe Gly Leu Ser Glu Thr Glu Pro Gly Ser Phe Leu Tyr Tyr  
 165 170 175  
 Ala Pro Phe Asp Gly Ile Leu Gly Leu Ala Tyr Pro Ser Ile Ser Ser  
 180 185 190  
 Ser Gly Ala Thr Pro Val Phe Asp Asn Ile Trp Asn Gln Gly Leu Val  
 195 200 205  
 Ser Gln Asp Leu Phe Ser Val Tyr Leu Ser Ala Asp Asp Gln Ser Gly  
 210 215 220  
 Ser Val Val Ile Phe Gly Gly Ile Asp Ser Ser Tyr Tyr Thr Gly Ser  
 225 230 235 240  
 Leu Asn Trp Val Pro Val Ser Val Glu Gly Tyr Trp Gln Ile Ser Val  
 245 250 255  
 Asp Ser Ile Thr Met Asn Gly Glu Ala Ile Ala Cys Ala Glu Gly Cys  
 260 265 270  
 Gln Ala Ile Val Asp Thr Gly Thr Ser Leu Leu Thr Ile Ser Gly Phe  
 275 280 285  
 Gln Gly Met Asp Val Pro Thr Glu Ser Gly Glu Leu Trp Ile Leu Gly  
 290 295 300  
 Asp Val Phe Ile Arg Gln Tyr Phe Thr Val Phe Asp Arg Ala Asn Asn  
 305 310 315 320  
 Gln Val Gly Leu Ala Pro Val Ala  
 325

<210> 133

<211> 369

<212> PRT

<213> Homo sapiens

<400> 133

Lys Val Pro Leu Ile Arg Lys Lys Ser Leu Arg Arg Thr Leu Ser Glu

1	5	10	15
Arg Gly Leu Leu Lys Asp Phe Leu Lys Lys His Asn Leu Asn Pro Ala	20	25	30
Arg Lys Tyr Phe Pro Gln Trp Glu Ala Pro Thr Leu Val Asp Glu Gln	35	40	45
Pro Leu Glu Asn Tyr Leu Asp Met Glu Tyr Phe Gly Thr Ile Gly Ile	50	55	60
Gly Thr Pro Ala Gln Asp Phe Thr Val Leu Phe Asp Thr Gly Ser Ser	65	70	75
Asn Leu Trp Val Pro Ser Val Tyr Cys Ser Ser Leu Ala Cys Thr Asn	85	90	95
His Asn Arg Phe Asn Pro Glu Asp Ser Ser Thr Tyr Gln Ala Thr Ser	100	105	110
Glu Thr Val Ser Ile Thr Tyr Gly Thr Gly Ser Met Thr Gly Ile Leu	115	120	125
Gly Tyr Asp Thr Val Gln Val Gly Gly Ile Ser Asp Thr Asn Gln Ile	130	135	140
Phe Gly Leu Ser Glu Thr Glu Pro Gly Ser Phe Leu Tyr Tyr Ala Pro	145	150	155
Phe Asp Gly Ile Leu Gly Leu Ala Tyr Pro Ser Ile Ser Ser Ser Gly	165	170	175
Ala Thr Pro Val Phe Asp Asn Ile Trp Asn Gln Gly Leu Val Ser Gln	180	185	190
Asp Leu Phe Ser Val Tyr Leu Ser Ala Asp Asp Gln Ser Gly Ser Val	195	200	205
Val Ile Phe Gly Gly Ile Asp Ser Ser Tyr Tyr Thr Gly Ser Leu Asn	210	215	220
Trp Val Pro Val Thr Val Glu Gly Tyr Trp Gln Ile Thr Val Asp Ser	225	230	235
Ile Thr Met Asn Gly Glu Ala Ile Ala Cys Ala Glu Gly Cys Gln Ala	245	250	255
Ile Val Asp Thr Gly Thr Ser Leu Leu Thr Gly Pro Thr Ser Pro Ile			





Leu Trp Val Pro Ser Val Tyr Cys Thr Ser Ser Tyr Ala Cys Lys Gly  
                     85                    90                    95

His Gly Thr Phe Asp Pro Ser Lys Ser Ser Thr Tyr Lys Asn Leu Gly  
                     100                    105                    110

Thr Thr Phe Ser Ile Ser Tyr Gly Asp Gly Ser Ser Ala Ser Gly Phe  
                     115                    120                    125

Leu Gly Gln Asp Thr Val Thr Val Gly Gly Ile Thr Val Thr Asn Gln  
                     130                    135                    140

Gln Phe Gly Leu Ala Thr Lys Glu Pro Gly Ser Phe Phe Ala Thr Ala  
 145                    150                    155                    160

Val Phe Asp Gly Ile Leu Gly Leu Gly Phe Pro Ser Ile Glu Ala Gly  
                     165                    170                    175

Gly Pro Tyr Thr Pro Val Phe Asp Asn Leu Lys Ser Gln Gly Leu Ile  
                     180                    185                    190

Asp Ser Pro Ala Phe Ser Val Tyr Leu Asn Ser Asp Ser Gly Ala Gly  
                     195                    200                    205

Gly Glu Ile Ile Phe Gly Gly Val Asp Pro Ser Lys Tyr Thr Gly Ser  
                     210                    215                    220

Leu Thr Trp Val Pro Val Thr Ser Gln Gly Tyr Trp Gln Ile Thr Leu  
 225                    230                    235                    240

Asp Ser Ile Thr Val Gly Gly Ser Thr Thr Phe Cys Ser Ser Gly Cys  
                     245                    250                    255

Gln Ala Ile Leu Asp Thr Gly Thr Ser Leu Leu Tyr Gly Pro Thr Ser  
                     260                    265                    270

Ile Val Ser Lys Ile Ala Lys Ala Val Gly Ala Ser Leu Ser Glu Tyr  
                     275                    280                    285

Ser Gly Glu Tyr Val Ile Asp Cys Asp Ser Ile Ser Ser Leu Pro Asp  
                     290                    295                    300

Ile Thr Phe Phe Ile Gly Gly Ala Lys Ile Thr Val Pro Pro Ser Ala  
 305                    310                    315                    320

Tyr Val Leu Gln Pro Ser Ser Gly Gly Ser Asp Ile Cys Leu Ser Gly  
                     325                    330                    335

Phe Gln Ser Asp Asp Ile Pro Gly Gly Pro Leu Trp Ile Leu Gly Asp  
 340 345 350

Val Phe Leu Arg Ser Ala Tyr Val Val Phe Asp Arg Asp Asn Asn Arg  
 355 360 365

Ile Gly Leu Ala Pro Ala  
 370

<210> 135

<211> 208

<212> PRT

<213> Mus musculus

<400> 135

Met Lys Val Thr Leu Val His Leu Leu Phe Met Met Leu Leu Leu Leu  
 1 5 10 15

Leu Gly Leu Gly Leu Gly Leu Gly Leu Gly Leu His Met Ala Ala Ala  
 20 25 30

Val Leu Glu Asp Gln Pro Leu Asn Glu Phe Trp Pro Ser Asp Ser Gln  
 35 40 45

Asn Thr Glu Glu Gly Glu Gly Ile Trp Thr Thr Glu Gly Leu Ala Leu  
 50 55 60

Gly Tyr Lys Glu Met Ala Gln Pro Val Trp Pro Glu Glu Ala Val Leu  
 65 70 75 80

Ser Glu Asp Glu Val Gly Gly Ser Arg Met Leu Arg Ala Glu Pro Arg  
 85 90 95

Phe Gln Ser Lys Gln Asp Tyr Leu Lys Phe Asp Leu Ser Val Arg Asp  
 100 105 110

Cys Asn Thr Met Met Ala His Lys Ile Lys Glu Pro Asn Gln Ser Cys  
 115 120 125

Ile Asn Gln Tyr Thr Phe Ile His Glu Asp Pro Asn Thr Val Lys Ala  
 130 135 140

Val Cys Asn Gly Ser Leu Val Asp Cys Asp Leu Gln Gly Gly Lys Cys  
 145 150 155 160

Tyr Lys Ser Pro Arg Pro Phe Asp Leu Thr Leu Cys Lys Leu Ala Lys



<210> 137  
 <211> 125  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> VARIANT  
 <222> (1)  
 <223> Where Xaa is any amino acid

<400> 137  
 Xaa Lys Glu Ser Ala Ala Ala Lys Phe Glu Arg Gln His Met Asp Ser  
     1                  5                  10                  15  
  
 Gly Asn Ser Pro Ser Ser Ser Ser Thr Tyr Cys Asn Gln Met Met Arg  
                   20                  25                  30  
  
 Arg Arg Asn Met Thr Gln Gly Arg Cys Lys Pro Val Asn Thr Phe Val  
                   35                  40                  45  
  
 His Glu Ser Leu Val Asp Val Gln Asn Val Cys Phe Gln Glu Lys Val  
                   50                  55                  60  
  
 Thr Cys Lys Asn Gly Gln Gly Asn Cys Tyr Lys Ser Asn Ser Ser Met  
     65                  70                  75                  80  
  
 His Ile Thr Asp Cys Arg Leu Thr Asn Gly Ser Arg Tyr Pro Asn Cys  
                   85                  90                  95  
  
 Ala Tyr Arg Thr Ser Pro Lys Glu Arg His Ile Ile Val Ala Cys Glu  
                   100                  105                  110  
  
 Gly Ser Pro Tyr Val Pro Val His Phe Asp Ala Ser Val  
                   115                  120                  125

<210> 138  
 <211> 128  
 <212> PRT  
 <213> Presbytis entellus

<400> 138  
 Gly Glu Ser Arg Ala Glu Lys Phe Gln Arg Gln His Met Asp Ser Gly  
     1                  5                  10                  15  
  
 Ser Ser Pro Ser Ser Ser Ser Thr Tyr Cys Asn Gln Met Met Lys Leu  
                   20                  25                  30

Arg Asn Met Thr Gln Gly Ser Cys Lys Ser Val Asn Thr Phe Val His  
35 40 45

Glu Pro Leu Val Asp Val Gln Asn Val Cys Phe Gln Glu Lys Val Thr  
50 55 60

Cys Lys Asn Gly Gln Thr Asn Cys Phe Lys Ser Asn Ser Arg Met His  
65 70 75 80

Ile Thr Glu Cys Arg Leu Thr Asn Gly Ser Lys Tyr Pro Asn Cys Ala  
85 90 95

Tyr Gly Thr Ser Pro Lys Glu Arg His Ile Ile Val Ala Cys Glu Gly  
100 105 110

Ser Pro Tyr Val Pro Val His Phe Asp Asp Ser Val Glu Asp Ser Thr  
115 120 125

<210> 139

<211> 119

<212> PRT

<213> Iguana iguana

<400> 139

Gln Asp Trp Ser Ser Phe Gln Asn Lys His Ile Asp Tyr Pro Glu Thr  
1 5 10 15

Ser Ala Ser Asn Pro Asn Ala Tyr Cys Asp Leu Met Met Gln Arg Arg  
20 25 30

Asn Leu Asn Pro Thr Lys Cys Lys Thr Arg Asn Thr Phe Val His Ala  
35 40 45

Ser Pro Ser Glu Ile Gln Gln Val Cys Gly Ser Gly Gly Thr His Tyr  
50 55 60

Glu Asp Asn Leu Tyr Asp Ser Asn Glu Ser Phe Asp Leu Thr Asp Cys  
65 70 75 80

Lys Asn Val Gly Gly Thr Ala Pro Ser Ser Cys Lys Tyr Asn Gly Thr  
85 90 95

Pro Gly Thr Lys Arg Ile Arg Ile Ala Cys Glu Asn Asn Gln Pro Val

100                      105                      110  
 His Phe Glu Leu Val Leu Ser  
 115  
  
 <210> 140  
 <211> 105  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 140  
 His Val Asp Tyr Pro Gln Asn Asp Val Pro Val Pro Ala Arg Tyr Cys  
 1                      5                      10                      15  
 Asn His Met Ile Ile Gln Arg Val Ile Arg Glu Pro Asp His Thr Cys  
 20                      25                      30  
 Lys Lys Glu His Val Phe Ile His Glu Arg Pro Arg Lys Ile Asn Gly  
 35                      40                      45  
 Ile Cys Ile Ser Pro Lys Lys Val Ala Cys Gln Asn Leu Ser Ala Ile  
 50                      55                      60  
 Phe Cys Phe Gln Ser Glu Thr Lys Phe Lys Met Thr Val Cys Gln Leu  
 65                      70                      75                      80  
 Ile Glu Gly Thr Arg Tyr Pro Ala Cys Arg Tyr His Tyr Ser Pro Thr  
 85                      90                      95  
 Glu Gly Phe Val Leu Val Thr Cys Asp  
 100                      105

<210> 141  
 <211> 99  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: RNase\_Pc,  
 Pancreatic ribonuclease

<400> 141  
 His Ile Asp Ser Thr Pro Ser Ser Ala Ser Asp Asn Tyr Cys Asn Gln  
 1                      5                      10                      15  
 Met Met Lys Arg Arg Asn Met Thr Gln Gly Arg Cys Lys Pro Val Asn





<220>

<223> Description of Artificial Sequence: rnaseA,  
Pancreatic ribonuclease

<400> 143

Asp Asn Tyr Cys Asn Gln Met Met Lys Arg Arg Asn Met Thr Gln Gly  
1 5 10 15  
Arg Cys Lys Pro Val Asn Thr Phe Val His Glu Ser Leu Ala Asp Val  
20 25 30  
Lys Ala Val Cys Ser Gln Lys Asn Val Thr Cys Lys Asn Gly Gln Lys  
35 40 45  
Asn Cys Tyr Gln Ser Thr Ser Ser Phe Gln Leu Thr Asp Cys Arg Leu  
50 55 60  
Thr Gly Gly Ser Lys Tyr Pro Asn Cys Arg Tyr Arg Thr Thr Pro Gly  
65 70 75 80  
Asn Lys Arg Ile Ile Val Ala Cys Glu  
85

<210> 144

<211> 698

<212> PRT

<213> Mus musculus

<400> 144

Met Glu Lys Tyr Glu Arg Ile Arg Val Val Gly Arg Gly Ala Phe Gly  
1 5 10 15  
Ile Val His Leu Cys Leu Arg Lys Ala Asp Gln Lys Leu Val Ile Leu  
20 25 30  
Lys Gln Ile Pro Val Glu Gln Met Thr Lys Glu Glu Arg Gln Ala Ala  
35 40 45  
Gln Asn Glu Cys Gln Val Leu Lys Leu Leu Asn His Pro Asn Val Ile  
50 55 60  
Glu Tyr Tyr Glu Asn Phe Leu Glu Asp Lys Ala Leu Met Ile Ala Met  
65 70 75 80  
Glu Tyr Ala Pro Gly Gly Thr Leu Ala Glu Phe Ile Gln Lys Arg Cys  
85 90 95

Asn Ser Leu Leu Glu Glu Glu Thr Ile Leu His Phe Phe Val Gln Ile  
 100 105 110  
 Leu Leu Ala Leu His His Val His Thr His Leu Ile Leu His Arg Asp  
 115 120 125  
 Leu Lys Thr Gln Asn Ile Leu Leu Asp Lys His Arg Met Val Val Lys  
 130 135 140  
 Ile Gly Asp Phe Gly Ile Ser Lys Ile Leu Ser Ser Lys Ser Lys Ala  
 145 150 155 160  
 Tyr Thr Val Val Gly Thr Pro Cys Tyr Ile Ser Pro Glu Leu Cys Glu  
 165 170 175  
 Gly Lys Pro Tyr Asn Gln Lys Ser Asp Ile Trp Ala Leu Gly Cys Val  
 180 185 190  
 Leu Tyr Glu Leu Ala Ser Leu Lys Arg Ala Phe Glu Ala Ala Asn Leu  
 195 200 205  
 Pro Ala Leu Val Leu Lys Ile Met Ser Gly Thr Phe Ala Pro Ile Ser  
 210 215 220  
 Asp Arg Tyr Ser Pro Glu Leu Arg Gln Leu Val Leu Ser Leu Leu Ser  
 225 230 235 240  
 Leu Glu Pro Ala Gln Arg Pro Pro Leu Ser His Ile Met Ala Gln Pro  
 245 250 255  
 Leu Cys Ile Arg Ala Leu Leu Asn Ile His Thr Asp Val Gly Ser Val  
 260 265 270  
 Arg Met Arg Arg Ala Glu Lys Ser Leu Thr Pro Gly Pro Pro Ile Ala  
 275 280 285  
 Ser Gly Ser Thr Gly Ser Arg Ala Thr Ser Ala Arg Cys Arg Gly Val  
 290 295 300  
 Pro Arg Gly Pro Val Arg Pro Ala Ile Pro Pro Pro Leu Ser Ser Val  
 305 310 315 320  
 Tyr Ala Trp Gly Gly Gly Leu Ser Ser Pro Leu Arg Leu Pro Met Leu  
 325 330 335  
 Asn Thr Glu Val Val Gln Val Ala Ala Gly Arg Thr Gln Lys Ala Gly  
 340 345 350

Val Thr Arg Ser Gly Arg Leu Ile Leu Trp Glu Ala Pro Pro Leu Gly  
 355 360 365  
 Ala Gly Gly Gly Thr Leu Leu Pro Gly Ala Val Glu Leu Pro Gln Pro  
 370 375 380  
 Gln Phe Val Ser Arg Phe Leu Glu Gly Gln Ser Gly Val Thr Ile Lys  
 385 390 395 400  
 His Val Ala Cys Gly Asp Leu Phe Thr Ala Cys Leu Thr Asp Arg Gly  
 405 410 415  
 Ile Ile Met Thr Phe Gly Ser Gly Ser Asn Gly Cys Leu Gly His Gly  
 420 425 430  
 Asn Leu Thr Asp Ile Ser Gln Pro Thr Ile Val Glu Ala Leu Leu Gly  
 435 440 445  
 Tyr Glu Met Val Gln Val Ala Cys Gly Ala Ser His Val Leu Ala Leu  
 450 455 460  
 Ser Thr Asp Gly Glu Leu Phe Ala Trp Gly Arg Gly Asp Gly Gly Arg  
 465 470 475 480  
 Leu Gly Leu Gly Thr Arg Glu Ser His Asn Cys Pro Gln Gln Val Pro  
 485 490 495  
 Val Ala Pro Gly Gln Glu Ala Gln Arg Val Val Cys Gly Ile Asp Ser  
 500 505 510  
 Ser Met Ile Leu Thr Ser Pro Gly Arg Val Leu Ala Cys Gly Ser Asn  
 515 520 525  
 Arg Phe Asn Lys Leu Gly Leu Asp His Leu Ser Leu Asp Glu Glu Pro  
 530 535 540  
 Val Pro Tyr Gln Gln Val Glu Glu Ala Leu Ser Phe Thr Pro Leu Gly  
 545 550 555 560  
 Ser Ala Pro Leu Asp Gln Glu Pro Leu Leu Cys Val Asp Leu Gly Thr  
 565 570 575  
 Ala His Ser Ala Ala Ile Thr Ala Ser Gly Asp Cys Tyr Thr Phe Gly  
 580 585 590  
 Ser Asn Gln His Gly Gln Leu Gly Thr Ser Ser Arg Arg Val Ser Arg  
 595 600 605

Ala Pro Cys Arg Val Gln Gly Leu Glu Gly Ile Lys Met Val Met Val  
610 615 620

Ala Cys Gly Asp Ala Phe Thr Val Ala Val Gly Ala Glu Gly Glu Val  
625 630 635 640

Tyr Ser Trp Gly Lys Gly Thr Arg Gly Arg Leu Gly Arg Arg Asp Glu  
645 650 655

Asp Ala Gly Leu Pro Arg Pro Val Gln Leu Asp Glu Thr His Pro Tyr  
660 665 670

Met Val Thr Ser Val Ser Cys Cys His Gly Asn Thr Leu Leu Ala Val  
675 680 685

Arg Ser Val Thr Asp Glu Pro Val Pro Pro  
690 695

<210> 145

<211> 291

<212> PRT

<213> Mus musculus

<400> 145

Met Glu Lys Tyr Glu Arg Ile Arg Val Val Gly Arg Gly Ala Leu Gly  
1 5 10 15

Ile Val His Leu Cys Leu Arg Lys Ala Asp Gln Lys Leu Val Ile Leu  
20 25 30

Lys Gln Ile Pro Val Glu Gln Met Thr Lys Glu Glu Arg Gln Ala Ala  
35 40 45

Gln Asn Glu Cys Gln Val Leu Lys Leu Leu Asn His Pro Asn Val Ile  
50 55 60

Glu Tyr Tyr Glu Asn Phe Leu Glu Asp Lys Ala Leu Met Ile Ala Met  
65 70 75 80

Glu Tyr Ala Pro Gly Gly Thr Leu Ala Glu Phe Ile Gln Lys Arg Cys  
85 90 95

Asn Ser Leu Leu Glu Glu Glu Thr Ile Leu His Phe Phe Val Gln Ile  
100 105 110

Leu Leu Ala Leu His His Val His Thr His Leu Ile Leu His Arg Asp  
115 120 125

Leu Lys Thr Gln Asn Ile Leu Leu Asp Lys His Arg Met Val Val Lys  
130 135 140

Ile Gly Asp Phe Gly Ile Ser Lys Ile Leu Ser Ser Lys Ser Lys Ala  
145 150 155 160

Tyr Thr Val Val Gly Thr Pro Cys Tyr Ile Ser Pro Glu Leu Cys Glu  
165 170 175

Gly Lys Pro Tyr Asn Gln Lys Ser Asp Ile Trp Ala Leu Gly Cys Val  
180 185 190

Leu Tyr Glu Leu Ala Ser Leu Lys Arg Ala Phe Glu Ala Ala Asn Leu  
195 200 205

Pro Ala Leu Val Leu Lys Ile Met Ser Gly Thr Phe Ala Pro Ile Ser  
210 215 220

Asp Arg Tyr Ser Pro Glu Leu Arg Gln Leu Val Leu Ser Leu Leu Ser  
225 230 235 240

Leu Glu Pro Ala Gln Gly Pro Pro Leu Ser His Ile Met Ala Gln Pro  
245 250 255

Leu Cys Ile Arg Ala Leu Leu Asn Ile His Thr Asp Val Gly Ser Val  
260 265 270

Arg Met Arg Arg Pro Val Gln Gly Asp Gly Ser Trp Gly Gly His Pro  
275 280 285

Val Arg Thr  
290

<210> 146

<211> 696

<212> PRT

<213> Danio rerio

<400> 146

Met Glu Lys Tyr Glu Lys Thr Lys Val Val Gly Arg Gly Ala Phe Gly  
1 5 10 15

Ile Val His Leu Cys Arg Arg Arg Thr Asp Ser Ala Leu Val Ile Leu  
20 25 30

Lys Glu Ile Pro Val Glu Gln Met Thr Arg Asp Glu Arg Leu Ala Ala

35	40	45																	
Gln	Asn	Glu	Cys	Gln	Val	Leu	Lys	Leu	Leu	Ser	His	Pro	Asn	Ile	Ile				
50						55					60								
Glu	Tyr	Tyr	Glu	Asn	Phe	Leu	Glu	Asp	Lys	Ala	Leu	Met	Ile	Ala	Met				
65					70					75					80				
Glu	Tyr	Ala	Pro	Gly	Gly	Thr	Leu	Ala	Asp	Tyr	Ile	Gln	Lys	Arg	Cys				
				85					90					95					
Asn	Ser	Leu	Leu	Asp	Glu	Asp	Thr	Ile	Leu	His	Ser	Phe	Val	Gln	Ile				
			100					105						110					
Leu	Leu	Ala	Leu	Tyr	His	Val	His	Asn	Lys	Leu	Ile	Leu	His	Arg	Asp				
		115					120					125							
Leu	Lys	Thr	Gln	Asn	Ile	Leu	Leu	Asp	Lys	His	Gln	Met	Ile	Val	Lys				
	130					135					140								
Ile	Gly	Asp	Phe	Gly	Ile	Ser	Lys	Ile	Leu	Val	Ser	Lys	Ser	Lys	Ala				
145				150						155					160				
Tyr	Thr	Val	Val	Gly	Thr	Pro	Cys	Tyr	Ile	Ser	Pro	Glu	Leu	Cys	Glu				
				165					170					175					
Gly	Lys	Pro	Tyr	Asn	Gln	Lys	Ser	Asp	Ile	Trp	Ala	Leu	Gly	Cys	Val				
			180					185					190						
Leu	Tyr	Glu	Leu	Ala	Ser	Leu	Lys	Arg	Ala	Phe	Glu	Ala	Ala	Asn	Leu				
	195						200					205							
Pro	Ala	Leu	Val	Leu	Lys	Ile	Met	Ser	Gly	Thr	Phe	Ala	Pro	Ile	Ser				
	210					215					220								
Asp	Arg	Tyr	Ser	Pro	Glu	Leu	Arg	Gln	Leu	Ile	Leu	Asn	Met	Leu	Asn				
225					230					235					240				
Leu	Asp	Pro	Ser	Lys	Arg	Pro	Gln	Leu	Asn	Glu	Ile	Met	Ala	His	Ala				
				245					250				255						
Ile	Cys	Ile	Arg	Pro	Leu	Leu	Asn	Leu	Tyr	Thr	Asp	Ile	Gly	Asn	Val				
		260					265						270						
Lys	Met	Arg	Arg	Ile	Glu	Lys	Pro	Leu	Ser	Asn	Val	Gln	Ala	Gly	Pro				
	275						280					285							
His	Gly	Arg	Pro	Gly	Gly	Trp	Ile	Thr	Ser	Thr	Arg	Thr	Arg	Gly	Gly				

290	295	300
Leu Ser Ser Leu Thr Ser Ser Lys Met Met His Pro Leu Pro Leu Phe		
305	310	315 320
Ser Val Tyr Thr Trp Gly Ser Gly Ile Ser Thr Pro Leu Arg Leu Pro		
	325	330 335
Met Leu Asn Thr Glu Val Ile Gln Val Ser Leu Gly Arg Thr Gln Lys		
	340	345 350
Met Gly Val Thr Lys Ser Arg Leu Ile Thr Trp Glu Ala Pro Ser Val		
	355	360 365
Gly Ser Gly Glu Pro Thr Leu Pro Gly Ala Val Glu Gln Met Gln Pro		
	370	375 380
Gln Phe Ile Ser Arg Phe Leu Glu Gly Gln Ser Gly Val Thr Ile Lys		
	385	390 395 400
Ser Val Ser Cys Gly Asp Leu Phe Thr Thr Cys Leu Thr Asp Arg Gly		
	405	410 415
Ile Ile Met Thr Phe Gly Ser Gly Ser Asn Gly Cys Leu Gly His Gly		
	420	425 430
Asn Phe Asn Asp Val Thr Gln Pro Lys Ile Val Glu Ala Leu Leu Gly		
	435	440 445
Tyr Glu Leu Val Gln Val Ser Cys Gly Ala Ser His Val Leu Ala Val		
	450	455 460
Thr Asn Glu Arg Glu Val Phe Ser Trp Gly Arg Gly Asp Asn Gly Arg		
	465	470 475 480
Leu Gly Leu Ala Thr Gln Asp Ser His Asn Cys Pro Gln Gln Val Ser		
	485	490 495
Leu Pro Ala Asp Phe Glu Ala Gln Arg Val Leu Cys Gly Val Asp Cys		
	500	505 510
Ser Met Ile Met Ser Thr Gln His Gln Ile Leu Ala Cys Gly Asn Asn		
	515	520 525
Arg Phe Asn Lys Leu Gly Leu Asp Lys Val Ser Gly Thr Glu Glu Pro		
	530	535 540
Ser Ser Phe Cys Gln Val Glu Glu Val His Leu Phe Gln Leu Val Gln		

545                      550                      555                      560  
 Ser Ala Pro Leu Asn Thr Glu Lys Ile Val Tyr Ile Asp Ile Gly Thr  
                                  565                      570                      575  
 Ala His Ser Val Ala Val Thr Glu Lys Gly Gln Cys Phe Thr Phe Gly  
                                  580                      585                      590  
 Ser Asn Gln His Gly Gln Leu Gly Cys Ser His Arg Arg Ser Ser Arg  
                                  595                      600                      605  
 Val Pro Tyr Gln Val Ser Gly Leu Gln Gly Ile Thr Met Ala Ala Cys  
                                  610                      615                      620  
 Gly Asp Ala Phe Thr Leu Ala Ile Gly Ala Glu Gly Glu Val Tyr Thr  
 625                                   630                      635                      640  
 Trp Gly Lys Gly Ala Arg Gly Arg Leu Gly Arg Lys Glu Glu Asp Phe  
                                  645                      650                      655  
 Gly Ile Pro Lys Pro Val Gln Leu Asp Glu Ser His Ala Phe Thr Val  
                                  660                      665                      670  
 Thr Ser Val Ala Cys Cys His Gly Asn Thr Leu Leu Ala Val Lys Pro  
                                  675                      680                      685  
 Phe Phe Glu Glu Pro Gly Pro Lys  
                                  690                      695

<210> 147  
 <211> 357  
 <212> PRT  
 <213> Caenorhabditis elegans

<400> 147  
 Met Asp Asn Tyr Glu Lys Val Arg Val Val Gly Arg Gly Ala Phe Gly  
   1                                   5                                   10                                   15  
 Val Cys Trp Leu Cys Arg Gly Lys Asn Asp Ala Ser His Gln Lys Val  
                                  20                                   25                                   30  
 Ile Ile Lys Leu Ile Asn Thr His Gly Met Thr Glu Lys Glu Glu Asn  
                                  35                                   40                                   45  
 Ser Ile Gln Ser Glu Val Asn Leu Leu Lys Lys Val Gln His Pro Leu  
                                  50                                   55                                   60



Ile	Ile	Gly	Tyr	Ile	Asp	Ser	Phe	Ile	Met	Asp	Asn	Gln	Leu	Gly	Ile	65	70	75	80
Val	Met	Gln	Tyr	Ala	Glu	Gly	Gly	Thr	Leu	Glu	Arg	Leu	Ile	Asn	Asp	85	90	95	
Gln	Arg	Ala	Ile	Lys	Asp	Ser	Asn	Met	Arg	Glu	Tyr	Phe	Pro	Glu	Lys	100	105	110	
Thr	Val	Leu	Asp	Tyr	Phe	Thr	Gln	Ile	Leu	Ile	Ala	Leu	Asn	His	Met	115	120	125	
His	Gln	Lys	Asn	Ile	Val	His	Arg	Asp	Leu	Lys	Pro	Gln	Asn	Ile	Leu	130	135	140	
Met	Asn	Arg	Arg	Lys	Thr	Val	Leu	Lys	Leu	Ser	Asp	Phe	Gly	Ile	Ser	145	150	155	160
Lys	Glu	Leu	Gly	Thr	Lys	Ser	Ala	Ala	Ser	Thr	Val	Ile	Gly	Thr	Pro	165	170	175	
Asn	Tyr	Leu	Ser	Pro	Glu	Ile	Cys	Glu	Ser	Arg	Pro	Tyr	Asn	Gln	Lys	180	185	190	
Ser	Asp	Met	Trp	Ser	Leu	Gly	Cys	Val	Leu	Tyr	Glu	Leu	Leu	Gln	Leu	195	200	205	
Glu	Arg	Ala	Phe	Asp	Gly	Glu	Asn	Leu	Pro	Ala	Ile	Val	Met	Lys	Ile	210	215	220	
Thr	Arg	Ser	Lys	Gln	Asn	Pro	Leu	Gly	Asp	His	Val	Ser	Asn	Asp	Val	225	230	235	240
Lys	Met	Leu	Val	Glu	Asn	Leu	Leu	Lys	Thr	His	Thr	Asp	Lys	Arg	Pro	245	250	255	
Asp	Val	Ser	Gln	Leu	Leu	Ser	Asp	Pro	Leu	Val	Leu	Pro	Tyr	Leu	Ile	260	265	270	
Ser	Ile	His	Cys	Asp	Leu	Gly	Arg	Ile	Glu	Pro	Pro	Pro	Thr	Asp	Lys	275	280	285	
Arg	Lys	Pro	Ser	Ala	Ser	Leu	Ser	Ser	Arg	Leu	Arg	Thr	Tyr	Pro	Thr	290	295	300	
Gln	Ser	Thr	Leu	Arg	Pro	Tyr	Ser	Leu	Ser	Ser	Asn	Ala	Pro	Thr	Thr	305	310	315	320

His Leu Thr Gln Leu Thr Pro Met Pro Ser His Ile Asp Ser Gly Phe  
 325 330 335

Phe Ser Ser Gly Arg Thr Ser Asn Gln Arg Thr Gln Ser Arg Ser Gln  
 340 345 350

Val His Ser Lys Tyr  
 355

<210> 148

<211> 841

<212> PRT

<213> *Drosophila melanogaster*

<400> 148

Met Lys Lys Phe Arg Ala Lys Ala Ser Ser Leu Pro Ile Phe Asn Gly  
 1 5 10 15

Arg Ile Thr Asp Ala Thr Thr Leu Thr Thr Ser Ser Leu Gln Leu Pro  
 20 25 30

Leu Gly Gln Asn Thr Gln Arg Lys Gln Ser Thr Cys Thr Arg Val Leu  
 35 40 45

Pro Thr Val Phe Thr Ile Thr Asp Gly Thr Thr Gly Ala Ala Ser Thr  
 50 55 60

Ser Leu Ala Glu Ala Met Ser Ser Ser Lys Ala Gln Met Pro Asn Arg  
 65 70 75 80

Gln Glu Ser Leu Leu Gln Leu Ser Val Pro Arg Glu Thr Gly Val Gly  
 85 90 95

Val Ala Gly Pro Glu Leu Ala Asn Tyr Glu Lys Val Arg Val Val Gly  
 100 105 110

Gln Gly Ser Phe Gly Ile Ala Ile Leu Tyr Arg Arg Lys Ser Asp Gly  
 115 120 125

His Gln Ile Val Phe Lys Gln Ile Asn Leu Ser Glu Leu Ser Pro Pro  
 130 135 140

Gly Arg Asp Leu Ala Met Asn Glu Val Asp Val Phe Ser Lys Leu His  
 145 150 155 160

His Pro Asn Ile Val Ser Tyr Leu Gly Ser Phe Ile Lys Asp Asn Thr  
 165 170 175

Leu Leu Ile Glu Met Glu Tyr Ala Asp Gly Gly Thr Leu Ala Gln Ile  
 180 185 190  
 Ile Ala Glu Arg Gln Gly Lys Leu His Phe Pro Glu Arg Tyr Ile Ile  
 195 200 205  
 Ala Val Phe Glu Gln Ile Ser Ser Ala Ile Asn Tyr Met His Ser Glu  
 210 215 220  
 Asn Ile Leu His Arg Asp Leu Lys Thr Ala Asn Val Phe Leu Asn Arg  
 225 230 235 240  
 Arg Gly Ile Val Lys Ile Gly Asp Phe Gly Ile Ser Lys Ile Met Asn  
 245 250 255  
 Thr Lys Ile His Ala Gln Thr Val Leu Gly Thr Pro Tyr Tyr Phe Ser  
 260 265 270  
 Pro Glu Met Cys Glu Gly Lys Glu Tyr Asp Asn Lys Ser Asp Ile Trp  
 275 280 285  
 Ala Leu Gly Cys Ile Leu Gly Glu Met Cys Cys Leu Lys Lys Thr Phe  
 290 295 300  
 Ala Ala Ser Asn Leu Ser Glu Leu Val Thr Lys Ile Met Ala Gly Asn  
 305 310 315 320  
 Tyr Thr Pro Val Pro Ser Gly Tyr Thr Ser Gly Leu Arg Ser Leu Met  
 325 330 335  
 Ser Asn Leu Leu Gln Val Glu Ala Pro Arg Arg Pro Thr Ala Ser Glu  
 340 345 350  
 Val Leu Val Tyr Trp Ile Pro Leu Ile Phe Arg Ser Leu Gly Lys Asn  
 355 360 365  
 Lys Gly Tyr Ser Tyr Glu Asp Asp Val Gly Gly Pro Gly Ser Asp Gln  
 370 375 380  
 Leu Thr Ala Pro Val Pro Ala Ala Ala Tyr Ser Asn Val Ser Met Glu  
 385 390 395 400  
 Leu Glu Leu Pro Thr Ala Gln Thr Glu Thr Lys Gln Leu Met Ile Ala  
 405 410 415  
 Asp Thr Ala Ala Pro His Glu Ile Leu Glu Lys Arg Ser Val Leu Tyr  
 420 425 430

Gln Leu Lys Ala Phe Gly Thr Cys Phe Ser Met Ala Pro Ile Gln Leu  
 435 440 445  
 Pro Pro Lys Ala Val Ile Val Asp Val Ala Met Ser Asp Ser His Phe  
 450 455 460  
 Val Val Val Asn Glu Asp Gly Ser Ala Tyr Ala Trp Gly Glu Gly Thr  
 465 470 475 480  
 His Gly Gln Leu Gly Leu Thr Ala Leu Glu Ala Trp Lys His Tyr Pro  
 485 490 495  
 Ser Arg Met Glu Ser Val Arg Asn Tyr His Val Val Ser Ala Cys Ala  
 500 505 510  
 Gly Asp Gly Phe Thr Ile Leu Val Thr Gln Ala Gly Ser Leu Leu Ser  
 515 520 525  
 Cys Gly Ser Asn Ala His Leu Ala Leu Gly Gln Asp Glu Gln Arg Asn  
 530 535 540  
 Tyr His Ser Pro Lys Leu Ile Ala Arg Leu Ala Asp Val Arg Val Glu  
 545 550 555 560  
 Gln Val Ala Ala Gly Leu Gln His Val Leu Ala Leu Ser Arg Glu Gly  
 565 570 575  
 Ala Val Tyr Val Trp Gly Thr Ser Thr Cys Gly Ala Leu Gly Leu Gly  
 580 585 590  
 Asn Tyr Gln Gln Gln Gln Lys Phe Pro Gln Lys Ile Leu Leu Ser His  
 595 600 605  
 Val Lys Thr Lys Pro Ser Lys Ile Tyr Cys Gly Pro Asp Thr Ser Ala  
 610 615 620  
 Val Leu Phe Ala Asn Gly Glu Leu His Val Cys Gly Ser Asn Asp Tyr  
 625 630 635 640  
 Asn Lys Leu Gly Phe Gln Arg Ser Ala Lys Ile Thr Ala Phe Lys Lys  
 645 650 655  
 Val Gln Leu Pro His Lys Val Thr Gln Ala Cys Phe Ser Ser Thr His  
 660 665 670  
 Ser Val Phe Leu Val Glu Gly Gly Tyr Val Tyr Thr Met Gly Arg Asn  
 675 680 685

Ala Glu Gly Gln Arg Gly Ile Arg His Cys Asn Ser Val Asp His Pro  
 690 695 700  
 Thr Leu Val Asp Ser Val Lys Ser Arg Tyr Ile Val Lys Ala Asn Cys  
 705 710 715 720  
 Ser Asp Gln Cys Thr Ile Val Ala Ser Glu Asp Asn Ile Ile Thr Val  
 725 730 735  
 Trp Gly Thr Arg Asn Gly Leu Pro Gly Ile Gly Ser Thr Asn Cys Gly  
 740 745 750  
 Leu Gly Leu Gln Ile Cys Thr Pro Asn Met Glu Leu Glu Leu Gly Asn  
 755 760 765  
 Asn Thr Ala Ala Phe Thr Asn Phe Leu Ala Ser Val Tyr Lys Ser Glu  
 770 775 780  
 Leu Ile Leu Glu Pro Val Asp Ile Leu Ala Leu Phe Ser Ser Lys Glu  
 785 790 795 800  
 Gln Cys Asp Arg Gly Tyr Tyr Val Gln Val His Asp Val Tyr Pro Leu  
 805 810 815  
 Ala His Ser Val Leu Val Leu Val Asp Thr Thr Thr Pro Leu Ile Ser  
 820 825 830  
 Ser Tyr Glu Gly Asp Tyr Pro His Leu  
 835 840  
  
 <210> 149  
 <211> 253  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 149  
 Tyr Glu Arg Ile Arg Val Val Gly Arg Gly Ala Phe Gly Ile Val His  
 1 5 10 15  
 Leu Cys Leu Arg Lys Ala Asp Gln Lys Leu Val Ile Ile Lys Gln Ile  
 20 25 30  
 Pro Val Glu Gln Met Thr Lys Glu Glu Arg Gln Ala Ala Gln Asn Glu  
 35 40 45  
 Cys Gln Val Leu Lys Leu Leu Asn His Pro Asn Val Ile Glu Tyr Tyr

50	55	60
Glu Asn Phe Leu Glu Asp Lys Ala Leu Met Thr Ala Met Glu Tyr Ala		
65	70	75 80
Pro Gly Gly Thr Leu Ala Glu Phe Ile Gln Lys Arg Cys Asn Ser Leu		
	85	90 95
Leu Glu Glu Glu Thr Ile Leu His Phe Phe Val Gln Ile Leu Leu Ala		
	100	105 110
Leu His His Val His Thr His Leu Ile Leu His Arg Asp Leu Lys Thr		
	115	120 125
Gln Asn Ile Leu Leu Asp Lys His Arg Met Val Val Lys Ile Gly Asp		
	130	135 140
Phe Gly Ile Ser Lys Ile Leu Ser Ser Lys Ser Lys Ala Tyr Thr Val		
	145	150 155 160
Val Gly Thr Pro Cys Tyr Ile Ser Pro Glu Leu Cys Glu Gly Lys Pro		
	165	170 175
Tyr Asn Gln Lys Ser Asp Ile Trp Ala Leu Gly Cys Val Leu Tyr Glu		
	180	185 190
Leu Ala Ser Leu Lys Arg Ala Phe Glu Ala Ala Asn Leu Pro Ala Leu		
	195	200 205
Val Leu Lys Ile Met Ser Gly Thr Phe Ala Pro Ile Ser Asp Arg Tyr		
	210	215 220
Ser Pro Glu Leu Arg Gln Leu Val Leu Ser Leu Leu Ser Leu Glu Pro		
	225	230 235 240
Ala Gln Arg Pro Pro Leu Ser His Ile Met Ala Gln Pro		
	245	250

<210> 150

<211> 254

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: S\_TKc,  
Serine/Threonine protein kinases

<400> 150

Tyr Glu Leu Leu Glu Val Leu Gly Lys Gly Ala Phe Gly Lys Val Tyr  
1 5 10 15

Leu Ala Arg Asp Lys Lys Thr Gly Lys Leu Val Ala Ile Lys Val Ile  
20 25 30

Lys Lys Glu Lys Leu Lys Lys Lys Lys Arg Glu Arg Ile Leu Arg Glu  
35 40 45

Ile Lys Ile Leu Lys Lys Leu Asp His Pro Asn Ile Val Lys Leu Tyr  
50 55 60

Asp Val Phe Glu Asp Asp Asp Lys Leu Tyr Leu Val Met Glu Tyr Cys  
65 70 75 80

Glu Gly Gly Asp Leu Phe Asp Leu Leu Lys Lys Arg Gly Arg Leu Ser  
85 90 95

Glu Asp Glu Ala Arg Phe Tyr Ala Arg Gln Ile Leu Ser Ala Leu Glu  
100 105 110

Tyr Leu His Ser Gln Gly Ile Ile His Arg Asp Leu Lys Pro Glu Asn  
115 120 125

Ile Leu Leu Asp Ser Asp Gly His Val Lys Leu Ala Asp Phe Gly Leu  
130 135 140

Ala Lys Gln Leu Asp Ser Gly Gly Thr Leu Leu Thr Thr Phe Val Gly  
145 150 155 160

Thr Pro Glu Tyr Met Ala Pro Glu Val Leu Leu Gly Lys Gly Tyr Gly  
165 170 175

Lys Ala Val Asp Ile Trp Ser Leu Gly Val Ile Leu Tyr Glu Leu Leu  
180 185 190

Thr Gly Lys Pro Pro Phe Pro Gly Asp Asp Gln Leu Leu Ala Leu Phe  
195 200 205

Lys Lys Ile Gly Lys Pro Pro Pro Pro Phe Pro Pro Pro Glu Trp Lys  
210 215 220

Ile Ser Pro Glu Ala Lys Asp Leu Ile Lys Lys Leu Leu Val Lys Asp  
225 230 235 240

Pro Glu Lys Arg Leu Thr Ala Glu Glu Ala Leu Glu His Pro  
245 250

<210> 151  
<211> 254  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: pkinase,  
Protein kinase domain sequence

<400> 151

Tyr	Glu	Leu	Gly	Glu	Lys	Leu	Gly	Ser	Gly	Ala	Phe	Gly	Lys	Val	Tyr
1				5					10					15	
Lys	Gly	Lys	His	Lys	Asp	Thr	Gly	Glu	Ile	Val	Ala	Ile	Lys	Ile	Leu
			20					25						30	
Lys	Lys	Arg	Ser	Leu	Ser	Glu	Lys	Lys	Lys	Arg	Phe	Leu	Arg	Glu	Ile
		35					40					45			
Gln	Ile	Leu	Arg	Arg	Leu	Ser	His	Pro	Asn	Ile	Val	Arg	Leu	Leu	Gly
	50					55					60				
Val	Phe	Glu	Glu	Asp	Asp	His	Leu	Tyr	Leu	Val	Met	Glu	Tyr	Met	Glu
	65				70					75					80
Gly	Gly	Asp	Leu	Phe	Asp	Tyr	Leu	Arg	Arg	Asn	Gly	Leu	Leu	Leu	Ser
			85						90						95
Glu	Lys	Glu	Ala	Lys	Lys	Ile	Ala	Leu	Gln	Ile	Leu	Arg	Gly	Leu	Glu
			100					105						110	
Tyr	Leu	His	Ser	Arg	Gly	Ile	Val	His	Arg	Asp	Leu	Lys	Pro	Glu	Asn
		115					120						125		
Ile	Leu	Leu	Asp	Glu	Asn	Gly	Thr	Val	Lys	Ile	Ala	Asp	Phe	Gly	Leu
	130					135						140			
Ala	Arg	Lys	Leu	Glu	Ser	Ser	Ser	Tyr	Glu	Lys	Leu	Thr	Thr	Phe	Val
	145				150					155					160
Gly	Thr	Pro	Glu	Tyr	Met	Ala	Pro	Glu	Val	Leu	Glu	Gly	Arg	Gly	Tyr
			165						170					175	
Ser	Ser	Lys	Val	Asp	Val	Trp	Ser	Leu	Gly	Val	Ile	Leu	Tyr	Glu	Leu
			180					185						190	



Leu Thr Gly Lys Leu Pro Phe Pro Gly Ile Asp Pro Leu Glu Glu Leu  
195 200 205

Phe Arg Ile Lys Glu Arg Pro Arg Leu Arg Leu Pro Leu Pro Pro Asn  
210 215 220

Cys Ser Glu Glu Leu Lys Asp Leu Ile Lys Lys Cys Leu Asn Lys Asp  
225 230 235 240

Pro Glu Lys Arg Pro Thr Ala Lys Glu Ile Leu Asn His Pro  
245 250

<210> 152

<211> 245

<212> PRT

<213> Homo sapiens

<400> 152

Arg Val Val Gly Arg Gly Ala Phe Gly Ile Val His Leu Cys Leu Arg  
1 5 10 15

Lys Ala Asp Gln Lys Leu Val Ile Ile Lys Gln Ile Pro Val Glu Gln  
20 25 30

Met Thr Lys Glu Glu Arg Gln Ala Ala Gln Asn Glu Cys Gln Val Leu  
35 40 45

Lys Leu Leu Asn His Pro Asn Val Ile Glu Tyr Tyr Glu Asn Phe Leu  
50 55 60

Glu Asp Lys Ala Leu Met Thr Ala Met Glu Tyr Ala Pro Gly Gly Thr  
65 70 75 80

Leu Ala Glu Phe Ile Gln Lys Arg Cys Asn Ser Leu Leu Glu Glu Glu  
85 90 95

Thr Ile Leu His Phe Phe Val Gln Ile Leu Leu Ala Leu His His Val  
100 105 110

His Thr His Leu Ile Leu His Arg Asp Leu Lys Thr Gln Asn Ile Leu  
115 120 125

Leu Asp Lys His Arg Met Val Val Lys Ile Gly Asp Phe Gly Ile Ser  
130 135 140

Lys Ile Leu Ser Ser Lys Ser Lys Ala Tyr Thr Val Val Gly Thr Pro  
145 150 155 160

Cys Tyr Ile Ser Pro Glu Leu Cys Glu Gly Lys Pro Tyr Asn Gln Lys  
165 170 175

Ser Asp Ile Trp Ala Leu Gly Cys Val Leu Tyr Glu Leu Ala Ser Leu  
180 185 190

Lys Arg Ala Phe Glu Ala Ala Asn Leu Pro Ala Leu Val Leu Lys Ile  
195 200 205

Met Ser Gly Thr Phe Ala Pro Ile Ser Asp Arg Tyr Ser Pro Glu Leu  
210 215 220

Arg Gln Leu Val Leu Ser Leu Leu Ser Leu Glu Pro Ala Gln Arg Pro  
225 230 235 240

Pro Leu Ser His Ile  
245

<210> 153

<211> 250

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: TyrKc,  
Tyrosine kinase domain

<400> 153

Lys Lys Leu Gly Glu Gly Ala Phe Gly Glu Val Tyr Lys Gly Thr Leu  
1 5 10 15

Lys Gly Lys Gly Gly Val Glu Val Glu Val Ala Val Lys Thr Leu Lys  
20 25 30

Glu Asp Ala Ser Glu Gln Gln Ile Glu Glu Phe Leu Arg Glu Ala Arg  
35 40 45

Leu Met Arg Lys Leu Asp His Pro Asn Ile Val Lys Leu Leu Gly Val  
50 55 60

Cys Thr Glu Glu Glu Pro Leu Met Ile Val Met Glu Tyr Met Glu Gly  
65 70 75 80

Gly Asp Leu Leu Asp Tyr Leu Arg Lys Asn Arg Pro Lys Glu Leu Ser  
85 90 95

Leu Ser Asp Leu Leu Ser Phe Ala Leu Gln Ile Ala Arg Gly Met Glu  
 100 105 110  
 Tyr Leu Glu Ser Lys Asn Phe Val His Arg Asp Leu Ala Ala Arg Asn  
 115 120 125  
 Cys Leu Val Gly Glu Asn Lys Thr Val Lys Ile Ala Asp Phe Gly Leu  
 130 135 140  
 Ala Arg Asp Leu Tyr Asp Asp Asp Tyr Tyr Arg Lys Lys Lys Ser Pro  
 145 150 155 160  
 Arg Leu Pro Ile Arg Trp Met Ala Pro Glu Ser Leu Lys Asp Gly Lys  
 165 170 175  
 Phe Thr Ser Lys Ser Asp Val Trp Ser Phe Gly Val Leu Leu Trp Glu  
 180 185 190  
 Ile Phe Thr Leu Gly Glu Ser Pro Tyr Pro Gly Met Ser Asn Glu Glu  
 195 200 205  
 Val Leu Glu Tyr Leu Lys Lys Gly Tyr Arg Leu Pro Gln Pro Pro Asn  
 210 215 220  
 Cys Pro Asp Glu Ile Tyr Asp Leu Met Leu Gln Cys Trp Ala Glu Asp  
 225 230 235 240  
 Pro Glu Asp Arg Pro Thr Phe Ser Glu Leu  
 245 250

<210> 154  
 <211> 488  
 <212> PRT  
 <213> Mus musculus

<400> 154  
 Met Arg Ser Gly Ala Glu Arg Arg Gly Ser Ser Ala Ala Ala Pro Pro  
 1 5 10 15  
 Ser Ser Pro Pro Pro Gly Arg Ala Arg Pro Ala Gly Ser Glu Val Ser  
 20 25 30  
 Pro Ala Leu Pro Pro Pro Ala Ala Ser Gln Pro Arg Ala Arg Asp Ala  
 35 40 45  
 Gly Asp Ala Arg Ala Gln Pro Arg Pro Leu Phe Gln Trp Ser Lys Trp  
 50 55 60

Lys Lys Arg Met Ser Met Ser Ser Ile Ser Ser Gly Ser Ala Arg Arg  
 65 70 75 80  
 Pro Val Phe Asp Asp Lys Glu Asp Val Asn Phe Asp His Phe Gln Ile  
 85 90 95  
 Leu Arg Ala Ile Gly Lys Gly Ser Phe Gly Lys Val Cys Ile Val Gln  
 100 105 110  
 Lys Arg Asp Thr Glu Lys Met Tyr Ala Met Lys Tyr Met Asn Lys Gln  
 115 120 125  
 Gln Cys Ile Glu Arg Asp Glu Val Arg Asn Val Phe Arg Glu Leu Glu  
 130 135 140  
 Ile Leu Gln Glu Ile Glu His Val Phe Leu Val Asn Leu Trp Tyr Ser  
 145 150 155 160  
 Phe Gln Asp Glu Glu Asp Met Phe Met Val Val Asp Leu Leu Leu Gly  
 165 170 175  
 Gly Asp Leu Arg Tyr His Leu Gln Gln Asn Val Gln Phe Ser Glu Asp  
 180 185 190  
 Thr Val Arg Leu Tyr Ile Cys Glu Met Ala Leu Ala Leu Asp Tyr Leu  
 195 200 205  
 Arg Ser Gln His Ile Ile His Arg Asp Val Lys Pro Asp Asn Ile Leu  
 210 215 220  
 Leu Asp Glu Gln Gly His Ala His Leu Thr Asp Phe Asn Ile Ala Thr  
 225 230 235 240  
 Ile Ile Lys Asp Gly Glu Arg Ala Thr Ala Leu Ala Gly Thr Lys Pro  
 245 250 255  
 Tyr Met Ala Pro Glu Ile Phe His Ser Phe Val Asn Gly Gly Thr Gly  
 260 265 270  
 Tyr Ser Phe Glu Val Asp Trp Trp Ser Val Gly Val Met Ala Tyr Glu  
 275 280 285  
 Leu Leu Arg Gly Trp Arg Pro Tyr Asp Ile His Ser Ser Asn Ala Val  
 290 295 300  
 Glu Ser Leu Val Gln Leu Phe Ser Thr Val Ser Val Gln Tyr Val Pro  
 305 310 315 320

Thr Trp Ser Lys Glu Met Val Ala Leu Leu Arg Lys Leu Leu Thr Val  
 325 330 335  
 Asn Pro Glu His Arg Phe Ser Ser Leu Gln Asp Met Gln Thr Ala Pro  
 340 345 350  
 Ser Leu Ala His Val Leu Trp Asp Asp Leu Ser Glu Lys Lys Val Glu  
 355 360 365  
 Pro Gly Phe Val Pro Asn Lys Gly Arg Leu His Cys Asp Pro Thr Phe  
 370 375 380  
 Glu Leu Glu Glu Met Ile Leu Glu Ser Arg Pro Leu His Lys Lys Lys  
 385 390 395 400  
 Lys Arg Leu Ala Lys Asn Lys Ser Arg Asp Ser Ser Arg Asp Ser Ser  
 405 410 415  
 Gln Ser Glu Asn Asp Tyr Leu Gln Asp Cys Leu Asp Ala Ile Gln Gln  
 420 425 430  
 Asp Phe Val Ile Phe Asn Arg Glu Lys Leu Lys Arg Ser Gln Glu Leu  
 435 440 445  
 Met Ser Glu Pro Pro Pro Gly Pro Glu Thr Ser Asp Met Thr Asp Ser  
 450 455 460  
 Thr Ala Asp Ser Glu Ala Glu Pro Thr Ala Leu Pro Met Cys Gly Ser  
 465 470 475 480  
 Ile Cys Pro Ser Ser Gly Ser Ser  
 485

<210> 155

<211> 369

<212> PRT

<213> Homo sapiens

<400> 155

Met Tyr Ala Met Lys Tyr Met Asn Lys Gln Gln Cys Ile Glu Arg Asp  
 1 5 10 15

Glu Val Arg Asn Val Phe Arg Glu Leu Glu Ile Leu Gln Glu Ile Glu  
 20 25 30

His Val Phe Leu Val Asn Leu Trp Tyr Ser Phe Gln Asp Glu Glu Asp

35	40	45																	
Met	Phe	Met	Val	Val	Asp	Leu	Leu	Leu	Gly	Gly	Asp	Leu	Arg	Tyr	His				
50						55					60								
Leu	Gln	Gln	Asn	Val	Gln	Phe	Ser	Glu	Asp	Thr	Val	Arg	Leu	Tyr	Ile				
65					70					75					80				
Cys	Glu	Met	Ala	Leu	Ala	Leu	Asp	Tyr	Leu	Arg	Gly	Gln	His	Ile	Ile				
				85					90					95					
His	Arg	Asp	Val	Lys	Pro	Asp	Asn	Ile	Leu	Leu	Asp	Glu	Arg	Gly	His				
			100					105						110					
Ala	His	Leu	Thr	Asp	Phe	Asn	Ile	Ala	Thr	Ile	Ile	Lys	Asp	Gly	Glu				
		115					120					125							
Arg	Ala	Thr	Ala	Leu	Ala	Gly	Thr	Lys	Pro	Tyr	Met	Ala	Pro	Glu	Ile				
	130					135					140								
Phe	His	Ser	Phe	Val	Asn	Gly	Gly	Thr	Gly	Tyr	Ser	Phe	Glu	Val	Asp				
145					150					155					160				
Trp	Trp	Ser	Val	Gly	Val	Met	Ala	Tyr	Glu	Leu	Leu	Arg	Gly	Trp	Arg				
				165					170					175					
Pro	Tyr	Asp	Ile	His	Ser	Ser	Asn	Ala	Val	Glu	Ser	Leu	Val	Gln	Leu				
			180					185						190					
Phe	Ser	Thr	Val	Ser	Val	Gln	Tyr	Val	Pro	Thr	Trp	Ser	Lys	Glu	Met				
		195					200					205							
Val	Ala	Leu	Leu	Arg	Lys	Leu	Leu	Thr	Val	Asn	Pro	Glu	His	Arg	Leu				
	210					215					220								
Ser	Ser	Leu	Gln	Asp	Val	Gln	Ala	Ala	Pro	Ala	Leu	Ala	Gly	Val	Leu				
225					230					235					240				
Trp	Asp	His	Leu	Ser	Glu	Lys	Arg	Val	Glu	Pro	Gly	Phe	Val	Pro	Asn				
				245					250					255					
Lys	Gly	Arg	Leu	His	Cys	Asp	Pro	Thr	Phe	Glu	Leu	Glu	Glu	Met	Ile				
			260					265					270						
Leu	Glu	Ser	Arg	Pro	Leu	His	Lys	Lys	Lys	Lys	Arg	Leu	Ala	Lys	Asn				
	275						280					285							
Lys	Ser	Arg	Asp	Asn	Ser	Arg	Asp	Ser	Ser	Gln	Ser	Glu	Asn	Asp	Tyr				

290                      295                      300  
 Leu Gln Asp Cys Leu Asp Ala Ile Gln Gln Asp Phe Val Ile Phe Asn  
 305                      310                      315                      320  
 Arg Glu Lys Leu Lys Arg Ser Gln Asp Leu Pro Arg Glu Pro Leu Pro  
                     325                      330                      335  
 Ala Pro Glu Ser Arg Asp Ala Ala Glu Pro Val Glu Asp Glu Ala Glu  
                     340                      345                      350  
 Arg Ser Ala Leu Pro Met Cys Gly Pro Ile Cys Pro Ser Ala Gly Ser  
                     355                      360                      365  
 Gly

<210> 156  
 <211> 368  
 <212> PRT  
 <213> *Macaca fuscata*

<400> 156  
 Met Tyr Ala Met Lys Tyr Met Asn Lys Gln Gln Cys Ile Glu Arg Asp  
   1                      5                      10                      15  
 Glu Val Arg Asn Val Phe Arg Glu Leu Gly Ile Leu Gln Glu Ile Glu  
                     20                      25                      30  
 His Val Phe Leu Val Asn Leu Trp Tyr Ser Phe Gln Asp Glu Glu Asp  
                     35                      40                      45  
 Met Phe Met Val Val Asp Leu Leu Leu Gly Gly Asp Leu Arg Tyr His  
                     50                      55                      60  
 Leu Gln Gln Asn Val Gln Phe Ser Glu Asp Thr Val Arg Leu Tyr Ile  
                     65                      70                      75                      80  
 Cys Glu Met Ala Leu Ala Leu Asp Tyr Leu Cys Gly Gln His Ile Ile  
                     85                      90                      95  
 His Arg Asp Val Lys Pro Asp Asn Ile Leu Leu Asp Glu Arg Gly His  
                     100                      105                      110  
 Ala His Leu Thr Asp Phe Asn Ile Ala Thr Ile Ile Lys Asp Gly Glu  
                     115                      120                      125

Arg Ala Thr Ala Leu Ala Gly Thr Lys Pro Tyr Met Ala Pro Glu Ile  
 130 135 140

Phe His Ser Phe Val Asn Gly Gly Thr Gly Tyr Ser Phe Glu Val Asp  
 145 150 155 160

Trp Trp Ser Leu Gly Val Met Ala Tyr Glu Leu Leu Arg Gly Trp Arg  
 165 170 175

Pro Tyr Asp Ile His Ser Ser Asn Ala Val Glu Ser Leu Val Gln Leu  
 180 185 190

Phe Ser Thr Val Ser Val Gln Tyr Val Pro Thr Trp Ser Arg Glu Met  
 195 200 205

Val Ala Leu Leu Arg Lys Leu Leu Thr Val Asn Pro Glu His Arg Phe  
 210 215 220

Ser Ser Leu Gln Asp Val Gln Ala Ala Pro Ala Leu Ala Gly Val Leu  
 225 230 235 240

Trp Gly His Leu Ser Glu Lys Arg Val Glu Pro Asp Phe Val Pro Asn  
 245 250 255

Lys Gly Arg Leu His Cys Asp Pro Thr Phe Glu Leu Glu Glu Met Ile  
 260 265 270

Leu Glu Ser Arg Pro Leu His Lys Lys Lys Lys Arg Leu Ala Lys Asn  
 275 280 285

Lys Ser Arg Asp Asn Ser Arg Asp Ser Ser Gln Ser Glu Asn Asp Tyr  
 290 295 300

Leu Gln Asp Cys Leu Asp Ala Ile Gln Gln Asp Phe Val Ile Phe Asn  
 305 310 315 320

Arg Glu Lys Leu Lys Arg Ser Gln Asp Leu Pro Ser Glu Pro Leu Pro  
 325 330 335

Ala Pro Glu Pro Arg Asp Ala Ala Glu Pro Val Glu Asp Glu Glu Gln  
 340 345 350

Ser Ala Leu Pro Met Cys Gly Pro Ile Cys Pro Ser Ala Gly Ser Gly  
 355 360 365



<210> 157  
 <211> 414  
 <212> PRT  
 <213> Homo sapiens

<400> 157

Met	Gly	Gly	Asn	His	Ser	His	Lys	Pro	Pro	Val	Phe	Asp	Glu	Asn	Glu	1	5	10	15
Glu	Val	Asn	Phe	Asp	His	Phe	Gln	Ile	Leu	Arg	Ala	Ile	Gly	Lys	Gly	20	25	30	
Ser	Phe	Gly	Lys	Val	Cys	Ile	Val	Gln	Lys	Arg	Asp	Thr	Lys	Lys	Met	35	40	45	
Tyr	Ala	Met	Lys	Tyr	Met	Asn	Lys	Gln	Lys	Cys	Ile	Glu	Arg	Asp	Glu	50	55	60	
Val	Arg	Asn	Val	Phe	Arg	Glu	Leu	Gln	Ile	Met	Gln	Gly	Leu	Glu	His	65	70	75	80
Pro	Phe	Leu	Val	Asn	Leu	Trp	Tyr	Ser	Phe	Gln	Asp	Glu	Glu	Asp	Met	85	90	95	
Phe	Met	Val	Val	Asp	Leu	Leu	Leu	Gly	Gly	Asp	Leu	Arg	Tyr	His	Leu	100	105	110	
Gln	Gln	Asn	Val	His	Phe	Thr	Glu	Gly	Thr	Val	Lys	Leu	Tyr	Ile	Cys	115	120	125	
Glu	Leu	Ala	Leu	Ala	Leu	Glu	Tyr	Leu	Gln	Arg	Tyr	His	Ile	Ile	His	130	135	140	
Arg	Asp	Ile	Lys	Pro	Asp	Asn	Ile	Leu	Leu	Asp	Glu	His	Gly	His	Val	145	150	155	160
His	Ile	Thr	Asp	Phe	Asn	Ile	Ala	Thr	Val	Val	Lys	Gly	Ala	Glu	Arg	165	170	175	
Ala	Ser	Ser	Met	Ala	Gly	Thr	Lys	Pro	Tyr	Met	Ala	Pro	Glu	Val	Phe	180	185	190	
Gln	Val	Tyr	Met	Asp	Arg	Gly	Pro	Gly	Tyr	Ser	Tyr	Pro	Val	Asp	Trp	195	200	205	
Trp	Ser	Leu	Gly	Ile	Thr	Ala	Tyr	Glu	Leu	Leu	Arg	Gly	Trp	Arg	Pro	210	215	220	

Tyr Glu Ile His Ser Val Thr Pro Ile Asp Glu Ile Leu Asn Met Phe  
 225 230 235 240

Lys Val Glu Arg Val His Tyr Ser Ser Thr Trp Cys Lys Gly Met Val  
 245 250 255

Ala Leu Leu Arg Lys Leu Leu Thr Lys Asp Pro Glu Ser Arg Val Ser  
 260 265 270

Ser Leu His Asp Ile Gln Ser Val Pro Tyr Leu Ala Asp Met Asn Trp  
 275 280 285

Asp Ala Val Phe Lys Lys Ala Leu Met Pro Gly Phe Val Pro Asn Lys  
 290 295 300

Gly Arg Leu Asn Cys Asp Pro Thr Phe Glu Leu Glu Glu Met Ile Leu  
 305 310 315 320

Glu Ser Lys Pro Leu His Lys Lys Lys Lys Arg Leu Ala Lys Asn Arg  
 325 330 335

Ser Arg Asp Gly Thr Lys Asp Ser Cys Pro Leu Asn Gly His Leu Gln  
 340 345 350

His Cys Leu Glu Thr Val Arg Glu Glu Phe Ile Ile Phe Asn Arg Glu  
 355 360 365

Lys Leu Arg Arg Gln Gln Gly Gln Gly Ser Gln Leu Leu Asp Thr Asp  
 370 375 380

Ser Arg Gly Gly Gly Gln Ala Gln Ser Lys Leu Gln Asp Gly Cys Asn  
 385 390 395 400

Asn Asn Leu Leu Thr His Thr Cys Thr Arg Gly Cys Ser Ser  
 405 410

<210> 158

<211> 414

<212> PRT

<213> Mus musculus

<400> 158

Met Gly Gly Asn His Ser His Lys Pro Pro Val Phe Asp Glu Asn Glu  
 1 5 10 15

Glu Val Asn Phe Asp His Phe Gln Ile Leu Arg Ala Ile Gly Lys Gly

20	25	30
Ser Phe Gly Lys Val Cys Ile Val Gln Lys Arg Asp Thr Lys Lys Met		
35	40	45
Tyr Ala Met Lys Tyr Met Asn Lys Gln Lys Cys Val Glu Arg Asp Glu		
50	55	60
Val Arg Asn Val Phe Arg Glu Leu Gln Ile Met Gln Gly Leu Glu His		
65	70	75
		80
Pro Phe Leu Val Asn Leu Trp Tyr Ser Phe Gln Asp Glu Glu Asp Met		
85	90	95
Phe Met Val Val Asp Leu Leu Leu Gly Gly Asp Leu Arg Tyr His Leu		
100	105	110
Gln Gln Asn Val His Phe Thr Glu Gly Thr Val Lys Leu Tyr Ile Cys		
115	120	125
Glu Leu Ala Leu Ala Leu Glu Tyr Leu Gln Arg Tyr His Ile Ile His		
130	135	140
Arg Asp Ile Lys Pro Asp Asn Ile Leu Leu Asp Glu His Gly His Val		
145	150	155
		160
His Ile Thr Asp Phe Asn Ile Ala Thr Val Leu Lys Gly Ser Glu Lys		
165	170	175
Ala Ser Ser Met Ala Gly Thr Lys Pro Tyr Met Ala Pro Glu Val Phe		
180	185	190
Gln Val Tyr Val Asp Gly Gly Pro Gly Tyr Ser Tyr Pro Val Asp Trp		
195	200	205
Trp Ser Leu Gly Val Thr Ala Tyr Glu Leu Leu Arg Gly Trp Arg Pro		
210	215	220
Tyr Glu Ile His Ser Ala Thr Pro Ile Asp Glu Ile Leu Asn Met Phe		
225	230	235
		240
Lys Val Glu Arg Val His Tyr Ser Ser Thr Trp Cys Glu Gly Met Val		
245	250	255
Ser Leu Leu Lys Lys Leu Leu Thr Lys Asp Pro Glu Ser Arg Leu Ser		
260	265	270
Ser Leu Arg Asp Ile Gln Ser Met Thr Tyr Leu Ala Asp Met Asn Trp		

275                                      280                                      285  
 Asp Ala Val Phe Glu Lys Ala Leu Met Pro Gly Phe Val Pro Asn Lys  
 290                                      295                                      300  
 Gly Arg Leu Asn Cys Asp Pro Thr Phe Glu Leu Glu Glu Met Ile Leu  
 305                                      310                                      315                                      320  
 Glu Ser Lys Pro Leu His Lys Lys Lys Lys Arg Leu Ala Lys His Arg  
 325                                      330                                      335  
 Ser Arg Asp Ser Thr Lys Asp Ser Cys Pro Leu Asn Gly His Leu Gln  
 340                                      345                                      350  
 Gln Cys Leu Glu Thr Val Arg Lys Glu Phe Ile Ile Phe Asn Arg Glu  
 355                                      360                                      365  
 Lys Leu Arg Arg Gln Gln Gly His Asp Gly Gln Leu Ser Asp Leu Asp  
 370                                      375                                      380  
 Gly Arg Ile Gly Ser Gln Thr Ser Ser Lys Leu Gln Asp Gly Arg Asn  
 385                                      390                                      395                                      400  
 Asn Asn Ile Leu Thr His Thr Cys Pro Arg Gly Cys Ser Ser  
 405                                      410  
  
 <210> 159  
 <211> 258  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 159  
 Phe Gln Ile Leu Arg Ala Ile Gly Lys Gly Ser Phe Gly Lys Val Val  
 1                                      5                                      10                                      15  
 Cys Ile Val Gln Lys Arg Asp Thr Glu Lys Met Tyr Ala Met Lys Tyr  
 20                                      25                                      30  
 Met Asn Lys Gln Gln Cys Ile Glu Arg Asp Glu Val Arg Asn Val Phe  
 35                                      40                                      45  
 Arg Glu Leu Glu Ile Leu Gln Glu Ile Glu His Val Phe Leu Val Asn  
 50                                      55                                      60  
 Leu Trp Tyr Ser Phe Gln Asp Glu Glu Asp Met Phe Met Val Val Asp  
 65                                      70                                      75                                      80

Leu Leu Leu Gly Gly Asp Leu Arg Tyr His Leu Gln Gln Asn Val Gln  
                     85                    90                    95  
 Phe Ser Glu Asp Thr Val Arg Leu Tyr Ile Cys Glu Met Ala Leu Ala  
                     100                    105                    110  
 Leu Asp Tyr Leu Arg Gly Gln His Ile Ile His Arg Asp Val Lys Pro  
                     115                    120                    125  
 Asp Asn Ile Leu Leu Asp Glu Arg Gly His Ala His Leu Thr Asp Phe  
                     130                    135                    140  
 Asn Ile Ala Thr Ile Ile Lys Asp Gly Glu Arg Ala Thr Ala Leu Ala  
                     145                    150                    155                    160  
 Gly Thr Lys Pro Tyr Met Ala Pro Glu Ile Phe His Ser Phe Val Asn  
                     165                    170                    175  
 Gly Gly Thr Gly Tyr Ser Phe Glu Val Asp Trp Trp Ser Val Gly Val  
                     180                    185                    190  
 Met Ala Tyr Glu Leu Leu Arg Gly Trp Arg Pro Tyr Asp Ile His Ser  
                     195                    200                    205  
 Ser Asn Ala Val Glu Ser Leu Val Gln Leu Phe Ser Thr Val Ser Val  
                     210                    215                    220  
 Gln Tyr Val Pro Thr Trp Ser Lys Glu Met Val Gly Leu Leu Arg Lys  
                     225                    230                    235                    240  
 Val Leu Leu Thr Val Asn Pro Glu His Arg Leu Ser Ser Leu Gln Asp  
                     245                    250                    255  
 Val Gln

<210> 160

<211> 252

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: S\_TKc,  
           Serine/Threonine protein kinases domain sequence

<400> 160

Tyr Glu Leu Leu Glu Val Leu Gly Lys Gly Ala Phe Gly Lys Val Tyr

1	5	10	15
Leu Ala Arg Asp Lys Lys Thr Gly Lys Leu Val Ala Ile Lys Val Ile	20	25	30
Lys Lys Glu Lys Leu Lys Lys Lys Lys Arg Glu Arg Ile Leu Arg Glu	35	40	45
Ile Lys Ile Leu Lys Lys Leu Asp His Pro Asn Ile Val Lys Leu Tyr	50	55	60
Asp Val Phe Glu Asp Asp Asp Lys Leu Tyr Leu Val Met Glu Tyr Cys	65	70	75
Glu Gly Gly Asp Leu Phe Asp Leu Leu Lys Lys Arg Gly Arg Leu Ser	85	90	95
Glu Asp Glu Ala Arg Phe Tyr Ala Arg Gln Ile Leu Ser Ala Leu Glu	100	105	110
Tyr Leu His Ser Gln Gly Ile Ile His Arg Asp Leu Lys Pro Glu Asn	115	120	125
Ile Leu Leu Asp Ser Asp Gly His Val Lys Leu Ala Asp Phe Gly Leu	130	135	140
Ala Lys Gln Leu Asp Ser Gly Gly Thr Leu Leu Thr Thr Phe Val Gly	145	150	155
Thr Pro Glu Tyr Met Ala Pro Glu Val Leu Leu Gly Lys Gly Tyr Gly	165	170	175
Lys Ala Val Asp Ile Trp Ser Leu Gly Val Ile Leu Tyr Glu Leu Leu	180	185	190
Thr Gly Lys Pro Pro Phe Pro Gly Asp Asp Gln Leu Leu Ala Leu Phe	195	200	205
Lys Lys Ile Gly Lys Pro Pro Pro Pro Phe Pro Pro Pro Glu Trp Lys	210	215	220
Ile Ser Pro Glu Ala Lys Asp Leu Ile Lys Lys Leu Leu Val Lys Asp	225	230	235
Pro Glu Lys Arg Leu Thr Ala Glu Glu Ala Leu Glu	245	250	

<210> 161  
 <211> 255  
 <212> PRT  
 <213> Homo sapiens

<400> 161  
 Phe Gln Ile Leu Arg Ala Ile Gly Lys Gly Ser Phe Gly Lys Val Val  
 1 5 10 15  
 Cys Ile Val Gln Lys Arg Asp Thr Glu Lys Met Tyr Ala Met Lys Tyr  
 20 25 30  
 Met Asn Lys Gln Gln Cys Ile Glu Arg Asp Glu Val Arg Asn Val Phe  
 35 40 45  
 Arg Glu Leu Glu Ile Leu Gln Glu Ile Glu His Val Phe Leu Val Asn  
 50 55 60  
 Leu Trp Tyr Ser Phe Gln Asp Glu Glu Asp Met Phe Met Val Val Asp  
 65 70 75 80  
 Leu Leu Leu Gly Gly Asp Leu Arg Tyr His Leu Gln Gln Asn Val Gln  
 85 90 95  
 Phe Ser Glu Asp Thr Val Arg Leu Tyr Ile Cys Glu Met Ala Leu Ala  
 100 105 110  
 Leu Asp Tyr Leu Arg Gly Gln His Ile Ile His Arg Asp Val Lys Pro  
 115 120 125  
 Asp Asn Ile Leu Leu Asp Glu Arg Gly His Ala His Leu Thr Asp Phe  
 130 135 140  
 Asn Ile Ala Thr Ile Ile Lys Asp Gly Glu Arg Ala Thr Ala Leu Ala  
 145 150 155 160  
 Gly Thr Lys Pro Tyr Met Ala Pro Glu Ile Phe His Ser Phe Val Asn  
 165 170 175  
 Gly Gly Thr Gly Tyr Ser Phe Glu Val Asp Trp Trp Ser Val Gly Val  
 180 185 190  
 Met Ala Tyr Glu Leu Leu Arg Gly Trp Arg Pro Tyr Asp Ile His Ser  
 195 200 205  
 Ser Asn Ala Val Glu Ser Leu Val Gln Leu Phe Ser Thr Val Ser Val  
 210 215 220

Gln Tyr Val Pro Thr Trp Ser Lys Glu Met Val Gly Leu Leu Arg Lys  
 225 230 235 240

Val Leu Leu Thr Val Asn Pro Glu His Arg Leu Ser Ser Leu Gln  
 245 250 255

<210> 162

<211> 249

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: pkinase,  
 Protein kinase domain

<400> 162

Tyr Glu Leu Gly Glu Lys Leu Gly Ser Gly Ala Phe Gly Lys Val Tyr  
 1 5 10 15

Lys Gly Lys His Lys Asp Thr Gly Glu Ile Val Ala Ile Lys Ile Leu  
 20 25 30

Lys Lys Arg Ser Leu Ser Glu Lys Lys Lys Arg Phe Leu Arg Glu Ile  
 35 40 45

Gln Ile Leu Arg Arg Leu Ser His Pro Asn Ile Val Arg Leu Leu Gly  
 50 55 60

Val Phe Glu Glu Asp Asp His Leu Tyr Leu Val Met Glu Tyr Met Glu  
 65 70 75 80

Gly Gly Asp Leu Phe Asp Tyr Leu Arg Arg Asn Gly Leu Leu Leu Ser  
 85 90 95

Glu Lys Glu Ala Lys Lys Ile Ala Leu Gln Ile Leu Arg Gly Leu Glu  
 100 105 110

Tyr Leu His Ser Arg Gly Ile Val His Arg Asp Leu Lys Pro Glu Asn  
 115 120 125

Ile Leu Leu Asp Glu Asn Gly Thr Val Lys Ile Ala Asp Phe Gly Leu  
 130 135 140

Ala Arg Lys Leu Glu Ser Ser Ser Tyr Glu Lys Leu Thr Thr Phe Val  
 145 150 155 160

Gly Thr Pro Glu Tyr Met Ala Pro Glu Val Leu Glu Gly Arg Gly Tyr



165 170 175  
 Ser Ser Lys Val Asp Val Trp Ser Leu Gly Val Ile Leu Tyr Glu Leu  
 180 185 190  
 Leu Thr Gly Lys Leu Pro Phe Pro Gly Ile Asp Pro Leu Glu Glu Leu  
 195 200 205  
 Phe Arg Ile Lys Glu Arg Pro Arg Leu Arg Leu Pro Leu Pro Pro Asn  
 210 215 220  
 Cys Ser Glu Glu Leu Lys Asp Leu Ile Lys Lys Cys Leu Asn Lys Asp  
 225 230 235 240  
 Pro Glu Lys Arg Pro Thr Ala Lys Glu  
 245  
  
 <210> 163  
 <211> 215  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 163  
 Ile Leu Arg Ala Ile Gly Lys Gly Ser Phe Gly Lys Val Val Cys Ile  
 1 5 10 15  
 Val Gln Lys Arg Asp Thr Glu Lys Met Tyr Ala Met Lys Tyr Met Asn  
 20 25 30  
 Lys Gln Gln Cys Ile Glu Arg Asp Glu Val Arg Asn Val Phe Arg Glu  
 35 40 45  
 Leu Glu Ile Leu Gln Glu Ile Glu His Val Phe Leu Val Asn Leu Trp  
 50 55 60  
 Tyr Ser Phe Gln Asp Glu Glu Asp Met Phe Met Val Val Asp Leu Leu  
 65 70 75 80  
 Leu Gly Gly Asp Leu Arg Tyr His Leu Gln Gln Asn Val Gln Phe Ser  
 85 90 95  
 Glu Asp Thr Val Arg Leu Tyr Ile Cys Glu Met Ala Leu Ala Leu Asp  
 100 105 110  
 Tyr Leu Arg Gly Gln His Ile Ile His Arg Asp Val Lys Pro Asp Asn  
 115 120 125

Ile Leu Leu Asp Glu Arg Gly His Ala His Leu Thr Asp Phe Asn Ile  
 130 135 140

Ala Thr Ile Ile Lys Asp Gly Glu Arg Ala Thr Ala Leu Ala Gly Thr  
 145 150 155 160

Lys Pro Tyr Met Ala Pro Glu Ile Phe His Ser Phe Val Asn Gly Gly  
 165 170 175

Thr Gly Tyr Ser Phe Glu Val Asp Trp Trp Ser Val Gly Val Met Ala  
 180 185 190

Tyr Glu Leu Leu Arg Gly Trp Arg Pro Tyr Asp Ile His Ser Ser Asn  
 195 200 205

Ala Val Glu Ser Leu Val Gln  
 210 215

<210> 164

<211> 216

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: TyrKc,  
 Tyrosine kinase domain

<400> 164

Leu Gly Lys Lys Leu Gly Glu Gly Ala Phe Gly Glu Val Tyr Lys Gly  
 1 5 10 15

Thr Leu Lys Gly Lys Gly Gly Val Glu Val Glu Val Ala Val Lys Thr  
 20 25 30

Leu Lys Glu Asp Ala Ser Glu Gln Gln Ile Glu Glu Phe Leu Arg Glu  
 35 40 45

Ala Arg Leu Met Arg Lys Leu Asp His Pro Asn Ile Val Lys Leu Leu  
 50 55 60

Gly Val Cys Thr Glu Glu Glu Pro Leu Met Ile Val Met Glu Tyr Met  
 65 70 75 80

Glu Gly Gly Asp Leu Leu Asp Tyr Leu Arg Lys Asn Arg Pro Lys Glu  
 85 90 95

Leu Ser Leu Ser Asp Leu Leu Ser Phe Ala Leu Gln Ile Ala Arg Gly

100 105 110  
 Met Glu Tyr Leu Glu Ser Lys Asn Phe Val His Arg Asp Leu Ala Ala  
 115 120 125  
 Arg Asn Cys Leu Val Gly Glu Asn Lys Thr Val Lys Ile Ala Asp Phe  
 130 135 140  
 Gly Leu Ala Arg Asp Leu Tyr Asp Asp Asp Tyr Tyr Arg Lys Lys Lys  
 145 150 155 160  
 Ser Pro Arg Leu Pro Ile Arg Trp Met Ala Pro Glu Ser Leu Lys Asp  
 165 170 175  
 Gly Lys Phe Thr Ser Lys Ser Asp Val Trp Ser Phe Gly Val Leu Leu  
 180 185 190  
 Trp Glu Ile Phe Thr Leu Gly Glu Ser Pro Tyr Pro Gly Met Ser Asn  
 195 200 205  
 Glu Glu Val Leu Glu Tyr Leu Lys  
 210 215  
  
 <210> 165  
 <211> 187  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 165  
 Met Gln Cys Leu Leu Leu Thr Leu Ser Met Ala Leu Val Cys Ala Ile  
 1 5 10 15  
 Gln Ala Arg Asp Ile Pro Gln Thr Lys Gln Asp Val Glu Leu Pro Lys  
 20 25 30  
 Leu Ala Gly Thr Trp Tyr Ser Met Ala Met Val Ala Ser Asp Phe Ser  
 35 40 45  
 Leu Leu Glu Thr Val Glu Ala Pro Leu Arg Val Asn Ile Thr Ser Leu  
 50 55 60  
 Trp Pro Thr Pro Glu Gly Asn Leu Glu Ile Ile Leu His Arg Trp Glu  
 65 70 75 80  
 His His Arg Cys Val Glu Arg Thr Val Leu Ala Gln Lys Thr Glu Asp  
 85 90 95

Pro Ala Val Phe Met Val Asp Arg Arg Ile Cys Arg Ala Ala Val Val  
100 105 110

Ser Gly Gln Gln Pro Ser Gln Arg Trp Arg Leu Ser Val Lys Glu Arg  
115 120 125

Ser Arg Lys Glu Gly Gly Arg Leu Pro Arg Ser Arg Asp Lys Lys Asp  
130 135 140

Leu Cys Val Gly His Arg Leu Asp Asp Arg Ser Tyr Val Phe Phe Cys  
145 150 155 160

Met Gly Thr Thr Thr Pro Ser Ala Asp His His Thr Met Cys Gln Tyr  
165 170 175

Leu Gly Met Thr Gln Gly Pro Pro Gly Phe Ile  
180 185

<210> 166

<211> 186

<212> PRT

<213> PAPIO CYNOCEPHALUS

<400> 166

Met Gln Cys Leu Leu Leu Thr Leu Gly Val Ala Leu Ile Cys Gly Val  
1 5 10 15

Trp Ala Ile Asn Ser Pro Gln Thr Met Gln Asp Val Glu Leu Pro Lys  
20 25 30

Leu Ala Gly Thr Trp His Ser Met Ala Met Ala Ala Ser Asp Phe Ser  
35 40 45

Leu Leu Glu Thr Lys Glu Ala Pro Leu Arg Ile Tyr Ile Ser Ser Leu  
50 55 60

Gln Pro Thr Pro Glu Gly Asn Leu Glu Ile Val Leu Arg Arg Trp Ser  
65 70 75 80

Gln Lys Gln Ser Pro Phe Arg Asp Ser Asn Gln Cys Ile Glu Glu Lys  
85 90 95

Ile Ile Ala Glu Lys Thr Glu Asn Pro Ile Glu Phe Lys Ile Asn Tyr  
100 105 110

Leu Asp Glu Asn Arg Ile Tyr Leu Phe Asn Thr Asp Gly Ser Lys Tyr  
115 120 125

Leu Phe Leu Cys Leu Glu Ser Thr Arg Arg Gln Asn Leu Ala Cys Gln  
 130 135 140

Tyr Leu Ala Arg Thr Leu Glu Val Asp Asp Lys Val Met Ala Glu Phe  
 145 150 155 160

Ile Ser Phe Leu Lys Thr Leu Pro Val His Met Gln Ile Phe Leu Asp  
 165 170 175

Met Thr Gln Ala Glu Glu Gln Cys Arg Val  
 180 185

<210> 167

<211> 180

<212> PRT

<213> Homo sapiens

<400> 167

Met Leu Cys Leu Leu Leu Thr Leu Gly Val Ala Leu Val Cys Gly Val  
 1 5 10 15

Pro Ala Met Asp Ile Pro Gln Thr Lys Gln Asp Leu Glu Leu Pro Lys  
 20 25 30

Leu Ala Gly Thr Trp His Ser Met Ala Met Ala Thr Asn Asn Ile Ser  
 35 40 45

Leu Met Ala Thr Leu Lys Ala Pro Leu Arg Val His Ile Thr Ser Leu  
 50 55 60

Leu Pro Thr Pro Glu Asp Asn Leu Glu Ile Val Leu His Arg Trp Glu  
 65 70 75 80

Asn Asn Ser Cys Val Glu Lys Lys Val Leu Gly Glu Lys Thr Glu Asn  
 85 90 95

Pro Lys Lys Phe Lys Ile Asn Tyr Thr Val Ala Asn Glu Ala Thr Leu  
 100 105 110

Leu Asp Thr Asp Tyr Asp Asn Phe Leu Phe Leu Cys Leu Gln Asp Thr  
 115 120 125

Thr Thr Pro Ile Gln Ser Met Met Cys Gln Tyr Leu Ala Arg Val Leu  
 130 135 140

Val Glu Asp Asp Glu Ile Met Gln Gly Phe Ile Arg Ala Phe Arg Pro

145                                      150                                      155                                      160  
 Leu Pro Arg His Leu Trp Tyr Leu Leu Asp Leu Lys Gln Met Glu Glu  
    165                                      170                                      175  
 Pro Cys Arg Phe  
    180  
  
 <210> 168  
 <211> 188  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 168  
 Ser Glu Pro Pro Thr Ala Ala Ala Met Leu Cys Leu Leu Leu Thr Leu  
   1                                      5                                      10                                      15  
 Gly Val Ala Leu Val Cys Gly Val Pro Ala Met Asp Ile Pro Gln Thr  
    20                                      25                                      30  
 Lys Gln Asp Leu Glu Leu Pro Lys Leu Ala Gly Thr Trp His Ser Met  
    35                                      40                                      45  
 Ala Met Ala Thr Asn Asn Ile Ser Leu Met Ala Thr Leu Lys Ala Pro  
   50                                      55                                      60  
 Leu Arg Val His Ile Thr Ser Leu Leu Pro Thr Pro Glu Asp Asn Leu  
   65                                      70                                      75                                      80  
 Glu Ile Val Leu His Arg Trp Glu Asn Asn Ser Cys Val Glu Lys Lys  
    85                                      90                                      95  
 Val Leu Gly Glu Lys Thr Glu Asn Pro Lys Lys Phe Lys Ile Asn Tyr  
    100                                      105                                      110  
 Thr Val Ala Asn Glu Ala Thr Leu Leu Asp Thr Asp Tyr Asp Asn Phe  
    115                                      120                                      125  
 Leu Phe Leu Cys Leu Gln Asp Thr Thr Thr Pro Ile Gln Ser Met Met  
   130                                      135                                      140  
 Cys Gln Tyr Leu Ala Arg Val Leu Val Glu Asp Asp Glu Ile Met Gln  
 145                                      150                                      155                                      160  
 Gly Phe Ile Arg Ala Phe Arg Pro Leu Pro Arg His Leu Trp Tyr Leu  
    165                                      170                                      175

Leu Asp Leu Lys Gln Met Glu Glu Pro Cys Arg Phe  
 180 185

<210> 169  
 <211> 163  
 <212> PRT  
 <213> *Felis catus*

<400> 169  
 Ala Thr Leu Pro Pro Thr Met Glu Asp Leu Asp Ile Arg Gln Val Ala  
 1 5 10 15  
 Gly Thr Trp His Ser Met Ala Met Ala Ala Ser Asp Ile Ser Leu Leu  
 20 25 30  
 Asp Ser Glu Thr Ala Pro Leu Arg Val Tyr Val Gln Glu Leu Arg Pro  
 35 40 45  
 Thr Pro Arg Asp Asn Leu Glu Ile Ile Leu Arg Lys Arg Glu Asn His  
 50 55 60  
 Ala Cys Ile Glu Gly Asn Ile Met Ala Gln Arg Thr Glu Asp Pro Ala  
 65 70 75 80  
 Val Phe Met Val Asp Tyr Gln Gly Glu Lys Lys Ile Ser Val Leu Asp  
 85 90 95  
 Thr Asp Tyr Thr His Tyr Met Phe Phe Cys Met Glu Ala Pro Ala Pro  
 100 105 110  
 Gly Thr Glu Asn Gly Met Met Cys Gln Tyr Leu Ala Arg Thr Leu Lys  
 115 120 125  
 Ala Asp Asn Glu Val Met Glu Lys Phe Asp Arg Ala Leu Gln Thr Leu  
 130 135 140  
 Pro Val His Ile Arg Ile Ile Leu Asp Leu Thr Gln Gly Lys Glu Gln  
 145 150 155 160  
 Cys Arg Val

<210> 170  
 <211> 145  
 <212> PRT  
 <213> *Homo sapiens*

<400> 170

Lys Phe Ala Gly Lys Trp Tyr Leu Val Ala Ser Ala Asn Phe Asp Pro  
1 5 10 15

Glu Leu Lys Glu Glu Leu Gly Val Leu Glu Ala Thr Arg Lys Glu Ile  
20 25 30

Thr Pro Leu Lys Glu Gly Asn Leu Glu Ile Val Phe Asp Gly Asp Lys  
35 40 45

Asn Gly Ile Cys Glu Glu Thr Phe Gly Lys Leu Glu Lys Thr Lys Lys  
50 55 60

Leu Gly Val Glu Phe Asp Tyr Tyr Thr Gly Asp Asn Arg Phe Val Val  
65 70 75 80

Leu Asp Thr Asp Tyr Asp Asn Tyr Leu Leu Val Cys Val Gln Lys Gly  
85 90 95

Asp Gly Asn Glu Thr Ser Arg Thr Ala Glu Leu Tyr Gly Arg Thr Pro  
100 105 110

Glu Leu Ser Pro Glu Ala Leu Glu Leu Phe Glu Thr Ala Thr Lys Glu  
115 120 125

Leu Gly Ile Pro Glu Asp Asn Val Val Cys Thr Arg Gln Thr Glu Arg  
130 135 140

Cys  
145

<210> 171

<211> 145

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: lipocalin  
domain sequence

<400> 171

Lys Phe Ala Gly Lys Trp Tyr Leu Val Ala Ser Ala Asn Phe Asp Pro  
1 5 10 15

Glu Leu Lys Glu Glu Leu Gly Val Leu Glu Ala Thr Arg Lys Glu Ile  
20 25 30



Thr Pro Leu Lys Glu Gly Asn Leu Glu Ile Val Phe Asp Gly Asp Lys  
35 40 45

Asn Gly Ile Cys Glu Glu Thr Phe Gly Lys Leu Glu Lys Thr Lys Lys  
50 55 60

Leu Gly Val Glu Phe Asp Tyr Tyr Thr Gly Asp Asn Arg Phe Val Val  
65 70 75 80

Leu Asp Thr Asp Tyr Asp Asn Tyr Leu Leu Val Cys Val Gln Lys Gly  
85 90 95

Asp Gly Asn Glu Thr Ser Arg Thr Ala Glu Leu Tyr Gly Arg Thr Pro  
100 105 110

Glu Leu Ser Pro Glu Ala Leu Glu Leu Phe Glu Thr Ala Thr Lys Glu  
115 120 125

Leu Gly Ile Pro Glu Asp Asn Val Val Cys Thr Arg Gln Thr Glu Arg  
130 135 140

Cys  
145

<210> 172

<211> 1327

<212> PRT

<213> Mus musculus

<400> 172

Met Glu Ala Pro Leu Gln Thr Gly Met Val Leu Gly Val Met Ile Gly  
1 5 10 15

Ala Gly Val Ala Val Leu Val Thr Ala Val Leu Ile Leu Leu Val Val  
20 25 30

Arg Arg Leu Arg Val Gln Lys Thr Pro Ala Pro Glu Gly Pro Arg Tyr  
35 40 45

Arg Phe Arg Lys Arg Asp Lys Val Leu Phe Tyr Gly Arg Lys Ile Met  
50 55 60

Arg Lys Val Ser Gln Ser Thr Ser Ser Leu Val Asp Thr Ser Val Ser  
65 70 75 80

Thr Thr Ser Arg Pro Arg Met Lys Lys Lys Leu Lys Met Leu Asn Ile

85	90	95
Ala Lys Lys Ile Leu Arg Ile Gln Lys Glu Thr Pro Thr Leu Gln Arg		
100	105	110
Lys Glu Pro Pro Pro Ser Val Leu Glu Ala Asp Leu Thr Glu Gly Asp		
115	120	125
Leu Ala Asn Ser His Leu Pro Ser Glu Val Leu Tyr Met Leu Lys Asn		
130	135	140
Val Arg Val Leu Gly His Phe Glu Lys Pro Leu Phe Leu Glu Leu Cys		
145	150	155
		160
Arg His Met Val Phe Gln Arg Leu Gly Gln Gly Asp Tyr Val Phe Arg		
165	170	175
Pro Gly Gln Pro Asp Ala Ser Ile Tyr Val Val Gln Asp Gly Leu Leu		
180	185	190
Glu Leu Cys Leu Pro Gly Pro Asp Gly Lys Glu Cys Val Val Lys Lys		
195	200	205
Val Val Pro Gly Asp Ser Val Asn Ser Leu Leu Ser Ile Leu Asp Val		
210	215	220
Ile Thr Gly His Gln His Pro Gln Arg Thr Val Ser Ala Arg Ala Ala		
225	230	235
		240
Arg Asp Ser Thr Val Leu Arg Leu Pro Val Glu Ala Phe Ser Ala Val		
245	250	255
Phe Thr Lys Tyr Pro Glu Ser Leu Val Arg Val Val Gln Ile Ile Met		
260	265	270
Val Arg Leu Gln Arg Val Thr Phe Leu Ala Leu His Asn Tyr Leu Gly		
275	280	285
Leu Thr Asn Glu Leu Phe Ser His Glu Ile Gln Pro Leu Arg Leu Phe		
290	295	300
Pro Ser Pro Gly Leu Pro Thr Arg Thr Ser Pro Val Arg Gly Ser Lys		
305	310	315
		320
Arg Val Val Ser Thr Ser Gly Thr Glu Asp Thr Ser Lys Glu Thr Ser		
325	330	335
Gly Arg Pro Leu Asp Ser Ile Gly Ala Pro Leu Pro Gly Pro Ala Gly		

340 345 350  
 Asp Pro Val Lys Pro Thr Ser Leu Glu Ala Pro Pro Ala Pro Leu Leu  
 355 360 365  
 Ser Arg Cys Ile Ser Met Pro Val Asp Ile Ser Gly Leu Gln Gly Gly  
 370 375 380  
 Pro Arg Ser Asp Phe Asp Met Ala Tyr Glu Arg Gly Arg Ile Ser Val  
 385 390 395 400  
 Ser Leu Gln Glu Glu Ala Ser Gly Gly Pro Gln Thr Ala Ser Pro Arg  
 405 410 415  
 Thr Pro Thr Gln Glu Leu Arg Glu Gln Pro Ala Gly Ala Cys Glu Tyr  
 420 425 430  
 Ser Tyr Cys Glu Asp Glu Ser Ala Thr Gly Gly Cys Pro Phe Gly Pro  
 435 440 445  
 Tyr Gln Gly Arg Gln Thr Ser Ser Ile Phe Glu Ala Ala Lys Arg Glu  
 450 455 460  
 Leu Ala Lys Leu Met Arg Ile Glu Asp Pro Ser Leu Leu Asn Ser Arg  
 465 470 475 480  
 Val Leu Leu His His Ala Lys Ala Gly Thr Ile Ile Ala Arg Gln Gly  
 485 490 495  
 Asp Gln Asp Val Ser Leu His Phe Val Leu Trp Gly Cys Leu His Val  
 500 505 510  
 Tyr Gln Arg Met Ile Asp Lys Ala Glu Glu Val Cys Leu Phe Val Ala  
 515 520 525  
 Gln Pro Gly Glu Leu Val Gly Gln Leu Ala Val Leu Thr Gly Glu Pro  
 530 535 540  
 Leu Ile Phe Thr Leu Arg Ala Gln Arg Asp Cys Thr Phe Leu Arg Ile  
 545 550 555 560  
 Ser Lys Ser His Phe Tyr Glu Ile Met Arg Ala Gln Pro Ser Val Val  
 565 570 575  
 Leu Ser Ala Ala His Thr Val Ala Ala Arg Met Ser Pro Phe Val Arg  
 580 585 590  
 Gln Met Asp Phe Ala Ile Asp Trp Thr Ala Val Glu Ala Gly Arg Ala

595		600		605
Leu Tyr Arg Gln Gly Asp Arg Ser Asp Cys Thr Tyr Ile Val Leu Asn				
610		615		620
Gly Arg Leu Arg Ser Val Ile Gln Arg Gly Ser Gly Lys Lys Glu Leu				
625		630		635
Val Gly Glu Tyr Gly Arg Gly Asp Leu Ile Gly Val Val Glu Ala Leu				
		645		650
				655
Thr Arg Gln Pro Arg Ala Thr Thr Val His Ala Val Arg Asp Thr Glu				
		660		665
				670
Leu Ala Lys Leu Pro Glu Gly Thr Leu Gly His Ile Lys Arg Arg Tyr				
		675		680
				685
Pro Gln Val Val Thr Arg Leu Ile His Leu Leu Ser Gln Lys Ile Leu				
		690		695
				700
Gly Asn Leu Gln Gln Leu Gln Gly Pro Phe Pro Gly Ser Gly Leu Ser				
705		710		715
				720
Val Pro Gln His Ser Glu Leu Thr Asn Pro Ala Ser Asn Leu Ser Thr				
		725		730
				735
Val Ala Ile Leu Pro Val Cys Ala Glu Val Pro Met Met Ala Phe Thr				
		740		745
				750
Leu Glu Leu Gln His Ala Leu Gln Ala Ile Gly Pro Thr Leu Leu Leu				
		755		760
				765
Asn Ser Asp Val Ile Arg Ala Leu Leu Gly Ala Ser Ala Leu Asp Ser				
		770		775
				780
Ile Gln Glu Phe Arg Leu Ser Gly Trp Leu Ala Gln Gln Glu Asp Ala				
785		790		795
				800
His Arg Ile Val Leu Tyr Gln Thr Asp Thr Ser Leu Thr Pro Trp Thr				
		805		810
				815
Val Arg Cys Leu Arg Gln Ala Asp Cys Ile Leu Ile Val Gly Leu Gly				
		820		825
				830
Asp Gln Glu Pro Thr Val Gly Gln Leu Glu Gln Met Leu Glu Asn Thr				
		835		840
				845
Ala Val Arg Ala Leu Lys Gln Leu Val Leu Leu His Arg Glu Glu Gly				

850	855	860
Pro Gly Pro Thr Arg Thr Val Glu Trp Leu Asn Met Arg Ser Trp Cys		
865	870	875 880
Ser Gly His Leu His Leu Arg Cys Pro Arg Arg Leu Phe Ser Arg Arg		
	885	890 895
Ser Pro Ala Lys Leu His Glu Leu Tyr Glu Lys Val Phe Ser Arg Arg		
	900	905 910
Ala Asp Arg His Ser Asp Phe Ser Arg Leu Ala Arg Val Leu Thr Gly		
	915	920 925
Asn Thr Ile Ala Leu Val Leu Gly Gly Gly Gly Ala Arg Gly Cys Ser		
	930	935 940
His Ile Gly Val Leu Lys Ala Leu Glu Glu Ala Gly Val Pro Val Asp		
	945	950 955 960
Leu Val Gly Gly Thr Ser Ile Gly Ser Phe Ile Gly Ala Leu Tyr Ala		
	965	970 975
Glu Glu Arg Ser Ala Ser Arg Thr Lys Gln Arg Ala Arg Glu Trp Ala		
	980	985 990
Lys Ser Met Thr Ser Val Leu Glu Pro Val Leu Asp Leu Thr Tyr Pro		
	995	1000 1005
Val Thr Ser Met Phe Thr Gly Ser Ala Phe Asn Arg Ser Ile His Arg		
	1010	1015 1020
Val Phe Gln Asp Lys Gln Ile Glu Asp Leu Trp Leu Pro Tyr Phe Asn		
	1025	1030 1035 1040
Val Thr Thr Asp Ile Thr Ala Ser Ala Met Arg Val His Lys Asp Gly		
	1045	1050 1055
Ser Leu Trp Arg Tyr Val Arg Ala Ser Met Thr Leu Ser Gly Tyr Leu		
	1060	1065 1070
Pro Pro Leu Cys Asp Pro Lys Asp Gly His Leu Leu Met Asp Gly Gly		
	1075	1080 1085
Tyr Ile Asn Asn Leu Pro Ala Asp Ile Ala Arg Ser Met Gly Ala Lys		
	1090	1095 1100
Thr Val Ile Ala Ile Asp Val Gly Ser Gln Asp Glu Thr Asp Leu Ser		

1105	1110	1115	1120
Thr Tyr Gly Asp Ser Leu Ser Gly Trp Trp Leu Leu Trp Lys Arg Leu			
1125		1130	1135
Asn Pro Trp Ala Asp Lys Val Lys Val Pro Asp Met Ala Glu Ile Gln			
1140	1145		1150
Ser Arg Leu Ala Tyr Val Ser Cys Val Arg Gln Leu Glu Val Val Lys			
1155	1160		1165
Ser Ser Ser Tyr Cys Glu Tyr Leu Arg Pro Ser Ile Asp Cys Phe Lys			
1170	1175	1180	
Thr Met Asp Phe Gly Lys Phe Asp Gln Ile Tyr Asp Val Gly Tyr Gln			
1185	1190	1195	1200
Tyr Gly Lys Ala Val Phe Gly Gly Trp Thr Arg Gly Glu Val Ile Glu			
1205	1210		1215
Lys Met Leu Thr Asp Arg Arg Ser Thr Asp Leu Asn Glu Ser Arg Arg			
1220	1225		1230
Ala Asp Ile Leu Ala Phe Pro Ser Ser Gly Phe Thr Asp Leu Ala Glu			
1235	1240		1245
Ile Val Ser Arg Ile Glu Pro Pro Thr Ser Tyr Val Ser Asp Gly Cys			
1250	1255	1260	
Ala Asp Gly Glu Glu Ser Asp Cys Leu Thr Glu Tyr Glu Glu Asp Ala			
1265	1270	1275	1280
Gly Pro Asp Cys Ser Arg Asp Glu Gly Gly Ser Pro Glu Gly Ala Ser			
1285	1290		1295
Pro Ser Thr Ala Ser Glu Val Glu Glu Glu Lys Ser Thr Leu Arg Gln			
1300	1305		1310
Arg Arg Phe Leu Pro Gln Glu Thr Pro Ser Ser Val Ala Asp Ala			
1315	1320		1325

<210> 173

<211> 702

<212> PRT

<213> Homo sapiens

<400> 173

Met Leu Ser Gly Arg Leu Arg Ser Val Ile Arg Lys Asp Asp Gly Lys  
 1 5 10 15  
 Lys Arg Leu Ala Gly Glu Tyr Gly Arg Gly Asp Leu Val Gly Val Val  
 20 25 30  
 Glu Thr Leu Thr His Gln Ala Arg Ala Thr Thr Val His Ala Val Arg  
 35 40 45  
 Asp Ser Glu Leu Ala Lys Leu Pro Ala Gly Ala Leu Thr Ser Ile Lys  
 50 55 60  
 Arg Arg Tyr Pro Gln Val Val Thr Arg Leu Ile His Leu Leu Gly Glu  
 65 70 75 80  
 Lys Ile Leu Gly Ser Leu Gln Gln Gly Pro Val Thr Gly His Gln Leu  
 85 90 95  
 Gly Leu Pro Thr Glu Gly Ser Lys Trp Asp Leu Gly Asn Pro Ala Val  
 100 105 110  
 Asn Leu Ser Thr Val Ala Val Met Pro Val Ser Glu Glu Val Pro Leu  
 115 120 125  
 Thr Ala Phe Ala Leu Glu Leu Glu His Ala Leu Ser Ala Ile Gly Pro  
 130 135 140  
 Thr Leu Leu Leu Thr Ser Asp Asn Ile Lys Arg Arg Leu Gly Ser Ala  
 145 150 155 160  
 Ala Leu Asp Ser Val His Glu Tyr Arg Leu Ser Ser Trp Leu Gly Gln  
 165 170 175  
 Gln Glu Asp Thr His Arg Ile Val Leu Tyr Gln Ala Asp Gly Thr Leu  
 180 185 190  
 Thr Pro Trp Thr Gln Arg Cys Val Arg Gln Ala Asp Cys Ile Leu Ile  
 195 200 205  
 Val Gly Leu Gly Asp Gln Glu Pro Thr Val Gly Glu Leu Glu Arg Met  
 210 215 220  
 Leu Glu Ser Thr Ala Val Arg Ala Gln Lys Gln Leu Ile Leu Leu His  
 225 230 235 240  
 Arg Glu Glu Gly Pro Ala Pro Ala Arg Thr Val Glu Trp Leu Asn Met  
 245 250 255

Arg Ser Ser Cys Ser Gly His Leu His Leu Cys Cys Pro Arg Arg Val  
 260 265 270

Phe Ser Arg Arg Ser Leu Pro Lys Leu Val Glu Met Tyr Lys His Val  
 275 280 285

Phe Gln Arg Pro Pro Asp Arg His Ser Asp Phe Ser Arg Leu Ala Arg  
 290 295 300

Val Leu Thr Gly Asn Ala Ile Ala Leu Val Leu Gly Gly Gly Gly Ala  
 305 310 315 320

Arg Gly Cys Ala Gln Val Gly Val Leu Lys Ala Leu Ala Glu Cys Gly  
 325 330 335

Ile Pro Val Asp Met Val Gly Gly Thr Ser Ile Gly Ala Phe Val Gly  
 340 345 350

Ala Leu Tyr Ser Glu Glu Arg Asn Tyr Ser Gln Met Arg Ile Arg Ala  
 355 360 365

Lys Gln Trp Ala Glu Gly Met Thr Ser Leu Met Lys Ala Ala Leu Asp  
 370 375 380

Leu Thr Tyr Pro Ile Thr Ser Met Phe Ser Gly Ala Gly Phe Asn Ser  
 385 390 395 400

Ser Ile Phe Ser Val Phe Lys Asp Gln Gln Ile Glu Asp Leu Trp Ile  
 405 410 415

Pro Tyr Phe Ala Ile Thr Thr Asp Ile Thr Ala Ser Ala Met Arg Val  
 420 425 430

His Thr Asp Gly Ser Leu Trp Arg Tyr Val Arg Ala Ser Met Ser Leu  
 435 440 445

Ser Gly Tyr Met Pro Pro Leu Cys Asp Pro Lys Asp Gly His Leu Leu  
 450 455 460

Met Asp Gly Gly Tyr Ile Asn Asn Leu Pro Ala Asp Val Ala Arg Ser  
 465 470 475 480

Met Gly Ala Lys Val Val Ile Ala Ile Asp Val Gly Ser Arg Asp Glu  
 485 490 495

Thr Asp Leu Thr Asn Tyr Gly Asp Ala Leu Ser Gly Trp Trp Leu Leu  
 500 505 510



Trp Lys Arg Trp Asn Pro Leu Ala Thr Lys Val Lys Val Leu Asn Met  
 515 520 525

Ala Glu Ile Gln Thr Arg Leu Ala Tyr Val Cys Cys Val Arg Gln Leu  
 530 535 540

Glu Val Val Lys Ser Ser Asp Tyr Cys Glu Tyr Leu Arg Pro Pro Ile  
 545 550 555 560

Asp Ser Tyr Ser Thr Leu Asp Phe Gly Lys Phe Asn Glu Ile Cys Glu  
 565 570 575

Val Gly Tyr Gln His Gly Arg Thr Val Phe Asp Ile Trp Gly Arg Ser  
 580 585 590

Gly Val Leu Glu Lys Met Leu Arg Asp Gln Gln Gly Pro Ser Lys Lys  
 595 600 605

Pro Ala Ser Ala Val Leu Thr Cys Pro Asn Ala Ser Phe Thr Asp Leu  
 610 615 620

Ala Glu Ile Val Ser Arg Ile Glu Pro Ala Lys Pro Ala Met Val Asp  
 625 630 635 640

Asp Glu Ser Asp Tyr Gln Thr Glu Tyr Glu Glu Glu Leu Leu Asp Val  
 645 650 655

Pro Arg Asp Ala Tyr Ala Asp Phe Gln Ser Thr Ser Ala Gln Gln Gly  
 660 665 670

Ser Asp Leu Glu Asp Glu Ser Ser Leu Arg His Arg His Pro Ser Leu  
 675 680 685

Ala Phe Pro Lys Leu Ser Glu Gly Ser Ser Asp Gln Asp Gly  
 690 695 700

<210> 174

<211> 1425

<212> PRT

<213> Drosophila melanogaster

<400> 174

Met Asp Val Leu Glu Met Leu Arg Ala Ser Ala Ser Gly Ser Tyr Asn  
 1 5 10 15

Thr Thr Phe Ser Asp Ala Trp Cys Gln Tyr Val Ser Lys Gln Ile Thr  
 20 25 30

Ala Thr Val Tyr Met Tyr Phe Ala Leu Val Met Met Ser Leu Leu Phe  
 35 40 45  
 Ile Ala Trp Phe Leu Tyr Phe Lys Arg Met Ala Arg Leu Arg Leu Arg  
 50 55 60  
 Asp Glu Ile Ala Arg Ser Ile Ser Thr Val Thr Asn Ser Ser Gly Asp  
 65 70 75 80  
 Met Arg Gly Leu Arg Phe Arg Lys Arg Asp Lys Met Leu Phe Tyr Gly  
 85 90 95  
 Arg Arg Met Leu Arg Lys Met Lys Asn Val Ser Gly Gln Met Tyr Ser  
 100 105 110  
 Ser Gly Lys Gly Tyr Lys Arg Arg Ala Val Met Arg Phe Ala Arg Arg  
 115 120 125  
 Ile Leu Gln Leu Arg Arg Asp Asn Met Pro Leu Glu Met Arg Thr Val  
 130 135 140  
 Glu Pro Pro Ala Glu Tyr Leu Glu Glu Thr Ile Glu Gly Ser Asp Arg  
 145 150 155 160  
 Val Pro Pro Asp Ala Leu Tyr Met Leu Gln Ser Ile Arg Ile Phe Gly  
 165 170 175  
 His Phe Glu Lys Pro Val Phe Leu Arg Leu Cys Lys His Thr Gln Leu  
 180 185 190  
 Leu Glu Leu Met Ala Gly Asp Tyr Leu Phe Lys Ile Thr Asp Pro Asp  
 195 200 205  
 Asp Ser Val Tyr Ile Val Gln Ser Gly Met Ile Asn Val Tyr Ile Ser  
 210 215 220  
 Asn Ala Asp Gly Ser Thr Leu Ser Leu Lys Thr Val Arg Lys Gly Glu  
 225 230 235 240  
 Ser Val Thr Ser Leu Leu Ser Phe Ile Asp Val Leu Ser Gly Asn Pro  
 245 250 255  
 Ser Tyr Tyr Lys Thr Val Thr Ala Lys Ala Ile Glu Lys Ser Val Val  
 260 265 270  
 Ile Arg Leu Pro Met Gln Ala Phe Glu Glu Val Phe Gln Asp Asn Pro  
 275 280 285

Asp Val Met Ile Arg Val Ile Gln Val Ile Met Ile Arg Leu Gln Arg  
 290 295 300

Val Leu Phe Thr Ala Leu Arg Asn Tyr Leu Gly Leu Asn Ala Glu Leu  
 305 310 315 320

Val Gln Asn His Met Arg Tyr Lys Ser Val Ser Thr Met Ser Gly Pro  
 325 330 335

Ile Asn Ser Gln Thr Ser Gln Ser Ser Arg Gln Ala Pro Asn Gly Pro  
 340 345 350

Pro Met Val Ile Ser Gln Met Asn Leu Met Gln Ser Ala Val Ser Gly  
 355 360 365

Thr Gly Ser Ser Gly Val Ser Val Thr Val Thr Arg Pro Pro Ser Ser  
 370 375 380

Pro Ser Arg His Ser Arg Glu Glu His Thr Leu Ser Asp Pro Asn Pro  
 385 390 395 400

Asn Pro Asp Gly Ser Phe His Gly Thr Thr Asn Leu Phe Thr Glu Val  
 405 410 415

His Gly Asp Ala Pro Asn Ala Asp Leu Phe His Gln Gln Gln Gln Gln  
 420 425 430

His Ser Val Gly Asn Leu Ser Thr Arg Arg Ser Ser Ile Thr Leu Met  
 435 440 445

Ala Pro Asp Pro Ser His Ser Cys Leu Gln Thr Pro Gly Val Thr Thr  
 450 455 460

Ser Ile Asp Met Arg Leu Val Gln Ser Ser Ala Val Asp Ser Leu Arg  
 465 470 475 480

Lys Glu Leu Gly Leu Ser Glu Glu Asp Ser His Ile Ile Glu Pro Phe  
 485 490 495

Val Glu Leu Arg Glu Leu Glu Pro Asn Val Thr Leu Ile Thr Glu Gly  
 500 505 510

Asn Ala Asp Asp Val Cys Val Trp Phe Val Met Thr Gly Thr Leu Ala  
 515 520 525

Val Tyr Gln Ser Asn Gln Asp Ala Thr Arg Ala Lys Gln Asp Lys Ser  
 530 535 540

Asp Met Leu Ile His Phe Val His Pro Gly Glu Ile Val Gly Gly Leu  
 545 550 555 560

Ala Met Leu Thr Gly Glu Ala Ser Ala Tyr Thr Ile Arg Ser Arg Ser  
 565 570 575

Ile Thr Arg Ile Ala Phe Ile Arg Arg Ala Ala Ile Tyr Gln Ile Met  
 580 585 590

Arg Gln Arg Pro Arg Ile Val Leu Asp Leu Gly Asn Gly Val Val Arg  
 595 600 605

Arg Leu Ser Pro Leu Val Arg Gln Cys Asp Tyr Ala Leu Asp Trp Ile  
 610 615 620

Phe Leu Glu Ser Gly Arg Ala Val Tyr Arg Gln Asp Glu Ser Ser Asp  
 625 630 635 640

Ser Thr Tyr Ile Val Leu Ser Gly Arg Met Arg Ser Val Ile Thr His  
 645 650 655

Pro Gly Gly Lys Lys Glu Ile Val Gly Glu Tyr Gly Lys Gly Asp Leu  
 660 665 670

Val Gly Ile Val Glu Met Ile Thr Glu Thr Ser Arg Thr Thr Thr Val  
 675 680 685

Met Ala Val Arg Asp Ser Glu Leu Ala Lys Leu Pro Glu Gly Leu Phe  
 690 695 700

Asn Ala Ile Lys Leu Arg Tyr Pro Ile Val Val Thr Lys Leu Ile Ser  
 705 710 715 720

Phe Leu Ser His Arg Phe Leu Gly Ser Met Gln Thr Arg Ser Gly Ser  
 725 730 735

Gly Ala Pro Gly Ala Pro Val Glu Ala Asn Pro Val Thr His Lys Tyr  
 740 745 750

Ser Thr Val Ala Leu Val Pro Ile Thr Asp Glu Val Pro Met Thr Pro  
 755 760 765

Phe Thr Tyr Glu Leu Tyr His Ser Leu Cys Ala Ile Gly Pro Val Leu  
 770 775 780

His Leu Thr Ser Asp Val Val Arg Lys Gln Leu Gly Ser Asn Ile Phe  
 785 790 795 800

Glu	Ala	Ala	Asn	Glu	Tyr	Arg	Leu	Thr	Ser	Trp	Leu	Ala	Gln	Gln	Glu	805	810	815	
Asp	Arg	Asn	Ile	Ile	Thr	Leu	Tyr	Gln	Cys	Asp	Ser	Ser	Leu	Ser	Ala	820	825	830	
Trp	Thr	Gln	Arg	Cys	Met	Arg	Gln	Ala	Asp	Val	Ile	Leu	Ile	Val	Gly	835	840	845	
Leu	Gly	Asp	Arg	Ser	His	Leu	Val	Gly	Lys	Phe	Glu	Arg	Glu	Ile	Asp	850	855	860	
Arg	Leu	Ala	Met	Arg	Thr	Gln	Lys	Glu	Leu	Val	Leu	Leu	Tyr	Pro	Glu	865	870	875	880
Ala	Ser	Asn	Ala	Lys	Pro	Ala	Asn	Thr	Leu	Ser	Trp	Leu	Asn	Ala	Arg	885	890	895	
Pro	Trp	Val	Thr	Lys	His	His	His	Val	Leu	Cys	Val	Lys	Arg	Ile	Phe	900	905	910	
Thr	Arg	Lys	Ser	Gln	Tyr	Arg	Ile	Asn	Asp	Leu	Tyr	Ser	Arg	Val	Leu	915	920	925	
Leu	Ser	Glu	Pro	Asn	Met	His	Ser	Asp	Phe	Ser	Arg	Leu	Ala	Arg	Trp	930	935	940	
Leu	Thr	Gly	Asn	Ser	Ile	Gly	Leu	Val	Leu	Gly	Gly	Gly	Gly	Ala	Arg	945	950	955	960
Gly	Ala	Ala	His	Ile	Gly	Met	Leu	Lys	Ala	Ile	Gln	Glu	Ala	Gly	Ile	965	970	975	
Pro	Val	Asp	Met	Val	Gly	Gly	Val	Ser	Ile	Gly	Ala	Leu	Met	Gly	Ala	980	985	990	
Leu	Trp	Cys	Ser	Glu	Arg	Asn	Ile	Thr	Thr	Val	Thr	Gln	Lys	Ala	Arg	995	1000	1005	
Glu	Trp	Ser	Lys	Lys	Met	Thr	Lys	Trp	Phe	Leu	Gln	Leu	Leu	Asp	Leu	1010	1015	1020	
Thr	Tyr	Pro	Ile	Thr	Ser	Met	Phe	Ser	Gly	Arg	Glu	Phe	Asn	Lys	Thr	1025	1030	1035	1040
Ile	His	Asp	Thr	Phe	Gly	Asp	Val	Ser	Ile	Glu	Asp	Leu	Trp	Ile	Pro	1045	1050	1055	

Tyr Phe Thr Leu Thr Thr Asp Ile Thr Ala Ser Cys His Arg Ile His  
 1060 1065 1070  
 Thr Asn Gly Ser Leu Trp Arg Tyr Val Arg Ser Ser Met Ser Leu Ser  
 1075 1080 1085  
 Gly Tyr Met Pro Pro Leu Cys Asp Pro Lys Asp Gly His Leu Leu Leu  
 1090 1095 1100  
 Asp Gly Gly Tyr Val Asn Asn Leu Pro Ala Asp Val Met His Asn Leu  
 1105 1110 1115 1120  
 Gly Ala Ala His Ile Ile Ala Ile Asp Val Gly Ser Gln Asp Asp Thr  
 1125 1130 1135  
 Asp Leu Thr Asn Tyr Gly Asp Asp Leu Ser Gly Trp Trp Leu Leu Tyr  
 1140 1145 1150  
 Lys Lys Trp Asn Pro Phe Thr Ser Pro Val Lys Val Pro Asp Leu Pro  
 1155 1160 1165  
 Asp Ile Gln Ser Arg Leu Ala Tyr Val Ser Cys Val Arg Gln Leu Glu  
 1170 1175 1180  
 Glu Val Lys Asn Ser Asp Tyr Cys Glu Tyr Ile Arg Pro Pro Ile Asp  
 1185 1190 1195 1200  
 Lys Tyr Lys Thr Leu Ala Phe Gly Ser Phe Asp Glu Ile Arg Asp Val  
 1205 1210 1215  
 Gly Tyr Val Phe Gly Lys Asn Tyr Phe Glu Ser Met Ala Lys Ala Gly  
 1220 1225 1230  
 Arg Leu Gly Arg Phe Asn Gln Trp Phe Asn Lys Glu Pro Pro Lys Arg  
 1235 1240 1245  
 Val Asn His Ala Ser Leu Asn Glu Tyr Thr Phe Ile Asp Leu Ala Gln  
 1250 1255 1260  
 Ile Val Cys Arg Leu Pro Glu Thr Tyr Ala Val Asn Thr Ala Glu Leu  
 1265 1270 1275 1280  
 Phe Ser Glu Asp Glu Asp Cys Asp Gly Tyr Ile Ser Glu Pro Thr Thr  
 1285 1290 1295  
 Leu Asn Thr Asp Arg Arg Arg Ile Gln Val Ser Arg Ala Gly Asn Ser  
 1300 1305 1310

Leu Ser Phe Ser Glu Thr Glu Met Asp Ser Asp Val Glu Leu Asp Leu  
 1315 1320 1325

Lys Leu Glu Arg Lys Thr Asp Lys Ser Thr Gln Ser Ser Pro Pro Ser  
 1330 1335 1340

Asn Ser Arg Ser Asp Met Arg Gly Lys Glu Glu Ala Arg His Met Ser  
 1345 1350 1355 1360

Asn Trp His Trp Gly Val Lys His Lys Asp Glu Thr Gly Ser Gly Ala  
 1365 1370 1375

Asn Glu Ala Thr Lys Thr Gln Thr Gly Gln Glu Gln Glu Leu Gln Gln  
 1380 1385 1390

Glu Gln Gln Asp Gln Gly Ala Thr Ala Glu Gln Leu Val Asp Lys Asp  
 1395 1400 1405

Lys Glu Glu Asn Lys Glu Asn Arg Ser Ser Pro Asn Asn Glu Thr Lys  
 1410 1415 1420

Asn  
 1425

<210> 175  
 <211> 1389  
 <212> PRT  
 <213> *Drosophila melanogaster*

<400> 175  
 Met Tyr Phe Ala Leu Val Met Met Ser Leu Leu Phe Ile Ala Trp Phe  
 1 5 10 15

Leu Tyr Phe Lys Arg Met Ala Arg Leu Arg Leu Arg Asp Glu Ile Ala  
 20 25 30

Arg Ser Ile Ser Thr Val Thr Asn Ser Ser Gly Asp Met Arg Gly Leu  
 35 40 45

Arg Phe Arg Lys Arg Asp Lys Met Leu Phe Tyr Gly Arg Arg Met Leu  
 50 55 60

Arg Lys Met Lys Asn Val Ser Gly Gln Met Tyr Ser Ser Gly Lys Gly  
 65 70 75 80

Tyr Lys Arg Arg Ala Val Met Arg Phe Ala Arg Arg Ile Leu Gln Leu

85	90	95
Arg Arg Asp Asn Met Pro Leu Glu Met Arg Thr Val Glu Pro Pro Ala		
100	105	110
Glu Tyr Leu Glu Glu Thr Ile Glu Gly Ser Asp Arg Val Pro Pro Asp		
115	120	125
Ala Leu Tyr Met Leu Gln Ser Ile Arg Ile Phe Gly His Phe Glu Lys		
130	135	140
Pro Val Phe Leu Arg Leu Cys Lys His Thr Gln Leu Leu Glu Leu Met		
145	150	155
		160
Ala Gly Asp Tyr Leu Phe Lys Ile Thr Asp Pro Asp Asp Ser Val Tyr		
165	170	175
Ile Val Gln Ser Gly Met Ile Asn Val Tyr Ile Ser Asn Ala Asp Gly		
180	185	190
Ser Thr Leu Ser Leu Lys Thr Val Arg Lys Gly Glu Ser Val Thr Ser		
195	200	205
Leu Leu Ser Phe Ile Asp Val Leu Ser Gly Asn Pro Ser Tyr Tyr Lys		
210	215	220
Thr Val Thr Ala Lys Ala Ile Glu Lys Ser Val Val Ile Arg Leu Pro		
225	230	235
		240
Met Gln Ala Phe Glu Glu Val Phe Gln Asp Asn Pro Asp Val Met Ile		
245	250	255
Arg Val Ile Gln Val Ile Met Ile Arg Leu Gln Arg Val Leu Phe Thr		
260	265	270
Ala Leu Arg Asn Tyr Leu Gly Leu Asn Ala Glu Leu Val Gln Asn His		
275	280	285
Met Arg Tyr Lys Ser Val Ser Thr Met Ser Gly Pro Ile Asn Ser Gln		
290	295	300
Thr Ser Gln Ser Ser Arg Gln Ala Pro Asn Gly Pro Pro Met Val Ile		
305	310	315
		320
Ser Gln Met Asn Leu Met Gln Ser Ala Val Ser Gly Thr Gly Ser Ser		
325	330	335
Gly Val Ser Val Thr Val Thr Arg Pro Pro Ser Ser Pro Ser Arg His		



340	345	350
Ser Arg Glu Glu His Thr Leu Ser Asp Pro Asn Pro Asn Pro Asp Gly		
355	360	365
Ser Phe His Gly Thr Thr Asn Leu Phe Thr Glu Val His Gly Asp Ala		
370	375	380
Pro Asn Ala Asp Leu Phe His Gln Gln Gln Gln Gln His Ser Val Gly		
385	390	395
Asn Leu Ser Thr Arg Arg Ser Ser Ile Thr Leu Met Ala Pro Asp Gly		
405	410	415
Ser His Ser Cys Leu Gln Thr Pro Gly Val Thr Thr Ser Ile Asp Met		
420	425	430
Arg Leu Val Gln Ser Ser Ala Val Asp Ser Leu Arg Lys Glu Leu Gly		
435	440	445
Leu Ser Glu Glu Asp Ser His Ile Ile Glu Pro Phe Val Glu Leu Arg		
450	455	460
Glu Leu Glu Pro Asn Val Thr Leu Ile Thr Glu Gly Asn Ala Asp Asp		
465	470	475
Val Cys Val Trp Phe Val Met Thr Gly Thr Leu Ala Val Tyr Gln Ser		
485	490	495
Asn Gln Asp Ala Thr Arg Ala Lys Gln Asp Lys Ser Asp Met Leu Ile		
500	505	510
His Phe Val His Pro Gly Glu Ile Val Gly Gly Leu Ala Met Leu Thr		
515	520	525
Gly Glu Ala Ser Ala Tyr Thr Ile Arg Ser Arg Ser Ile Thr Arg Ile		
530	535	540
Ala Phe Ile Arg Arg Ala Ala Ile Tyr Gln Ile Met Arg Gln Arg Pro		
545	550	555
Arg Ile Val Leu Asp Leu Gly Asn Gly Val Val Arg Arg Leu Ser Pro		
565	570	575
Leu Val Arg Gln Cys Asp Tyr Ala Leu Asp Trp Ile Phe Leu Glu Ser		
580	585	590
Gly Arg Ala Val Tyr Arg Gln Asp Glu Ser Ser Asp Ser Thr Tyr Ile		

595	600	605
Val Leu Ser Gly Arg Met Arg Ser Val Ile Thr His Pro Gly Gly Lys		
610	615	620
Lys Glu Ile Val Gly Glu Tyr Gly Lys Gly Asp Leu Val Gly Ile Val		
625	630	635 640
Glu Met Ile Thr Glu Thr Ser Arg Thr Thr Thr Val Met Ala Val Arg		
	645	650 655
Asp Ser Glu Leu Ala Lys Leu Pro Glu Gly Leu Phe Asn Ala Ile Lys		
	660	665 670
Leu Arg Tyr Pro Ile Val Val Thr Lys Leu Ile Ser Phe Leu Ser His		
	675	680 685
Arg Phe Leu Gly Ser Met Gln Thr Arg Ser Gly Ser Gly Ala Pro Gly		
	690	695 700
Ala Pro Val Glu Ala Asn Pro Val Thr His Lys Tyr Ser Thr Val Ala		
705	710	715 720
Leu Val Pro Ile Thr Asp Glu Val Pro Met Thr Pro Phe Thr Tyr Glu		
	725	730 735
Leu Tyr His Ser Leu Cys Ala Ile Gly Pro Val Leu Arg Leu Thr Ser		
	740	745 750
Asp Val Val Arg Lys Gln Leu Gly Ser Asn Ile Phe Glu Ala Ala Asn		
	755	760 765
Glu Tyr Arg Leu Thr Ser Trp Leu Ala Gln Gln Glu Asp Arg Asn Ile		
	770	775 780
Ile Thr Leu Tyr Gln Cys Asp Ser Ser Leu Ser Ala Trp Thr Gln Arg		
785	790	795 800
Cys Met Arg Gln Ala Asp Val Ile Leu Ile Val Gly Leu Gly Asp Arg		
	805	810 815
Ser His Leu Val Gly Lys Phe Glu Arg Glu Ile Asp Arg Leu Ala Met		
	820	825 830
Arg Thr Gln Lys Glu Leu Val Leu Leu Tyr Pro Glu Ala Ser Asn Ala		
	835	840 845
Lys Pro Ala Asn Thr Leu Ser Trp Leu Asn Ala Arg Pro Trp Val Thr		

850                                      855                                      860  
 Lys His His His Val Leu Cys Val Lys Arg Ile Phe Thr Arg Lys Ser  
 865                                      870                                      875                                      880  
 Gln Tyr Arg Ile Asn Asp Leu Tyr Ser Arg Val Leu Leu Ser Glu Pro  
                                     885                                      890                                      895  
 Asn Met His Ser Asp Phe Ser Arg Leu Ala Arg Trp Leu Thr Gly Asn  
                                     900                                      905                                      910  
 Ser Ile Gly Leu Val Leu Gly Gly Gly Gly Ala Arg Gly Ala Ala His  
                                     915                                      920                                      925  
 Ile Gly Met Leu Lys Ala Ile Gln Glu Ala Gly Ile Pro Val Asp Met  
                                     930                                      935                                      940  
 Val Gly Gly Val Ser Ile Gly Ala Leu Met Gly Ala Leu Trp Cys Ser  
 945                                      950                                      955                                      960  
 Glu Arg Asn Ile Thr Thr Val Thr Gln Lys Ala Arg Glu Trp Ser Lys  
                                     965                                      970                                      975  
 Lys Met Thr Lys Trp Phe Leu Gln Leu Leu Asp Leu Thr Tyr Pro Ile  
                                     980                                      985                                      990  
 Thr Ser Met Phe Ser Gly Arg Glu Phe Asn Lys Thr Ile His Asp Thr  
                                     995                                      1000                                      1005  
 Phe Gly Asp Val Ser Ile Glu Asp Leu Trp Ile Pro Tyr Phe Thr Leu  
                                     1010                                      1015                                      1020  
 Thr Thr Asp Ile Thr Ala Ser Cys His Arg Ile His Thr Asn Gly Ser  
 1025                                      1030                                      1035                                      1040  
 Leu Trp Arg Tyr Val Arg Ser Ser Met Ser Leu Ser Gly Tyr Met Pro  
                                     1045                                      1050                                      1055  
 Pro Leu Cys Asp Pro Lys Asp Gly His Leu Leu Leu Asp Gly Gly Tyr  
                                     1060                                      1065                                      1070  
 Val Asn Asn Leu Pro Ala Asp Val Met His Asn Leu Gly Ala Ala His  
                                     1075                                      1080                                      1085  
 Ile Ile Ala Ile Asp Val Gly Ser Gln Asp Asp Thr Asp Leu Thr Asn  
                                     1090                                      1095                                      1100  
 Tyr Gly Asp Asp Leu Ser Gly Trp Trp Leu Leu Tyr Lys Lys Trp Asn

1105	1110	1115	1120
Pro Phe Thr Ser Pro Val Lys Val Pro Asp Leu Pro Asp Ile Gln Ser	1125	1130	1135
Arg Leu Ala Tyr Val Ser Cys Val Arg Gln Leu Glu Glu Val Lys Asn	1140	1145	1150
Ser Asp Tyr Cys Glu Tyr Ile Arg Pro Pro Ile Asp Lys Tyr Lys Thr	1155	1160	1165
Leu Ala Phe Gly Ser Phe Asp Glu Ile Arg Asp Val Gly Tyr Val Phe	1170	1175	1180
Gly Lys Asn Tyr Phe Glu Ser Met Ala Lys Ala Gly Arg Leu Gly Arg	1185	1190	1195
Phe Asn Gln Trp Phe Asn Lys Glu Pro Pro Lys Arg Val Asn His Ala	1205	1210	1215
Ser Leu Asn Glu Tyr Thr Phe Ile Asp Leu Ala Gln Ile Val Cys Arg	1220	1225	1230
Leu Pro Glu Thr Tyr Ala Val Asn Thr Ala Glu Leu Phe Ser Glu Asp	1235	1240	1245
Glu Asp Cys Asp Gly Tyr Ile Ser Glu Pro Thr Thr Leu Asn Thr Asp	1250	1255	1260
Arg Arg Arg Ile Gln Val Ser Arg Ala Gly Asn Ser Leu Ser Phe Ser	1265	1270	1275
Glu Thr Glu Met Asp Ser Asp Val Glu Leu Asp Leu Lys Leu Glu Arg	1285	1290	1295
Lys Thr Asp Lys Ser Thr Gln Ser Ser Pro Pro Ser Asn Ser Arg Ser	1300	1305	1310
Asp Met Arg Gly Lys Glu Glu Ala Arg His Met Ser Asn Trp His Trp	1315	1320	1325
Gly Val Lys His Lys Asp Glu Thr Gly Ser Gly Ala Thr Glu Ala Thr	1330	1335	1340
Lys Thr Gln Thr Gly Gln Glu Gln Glu Leu Gln Gln Glu Gln Asp	1345	1350	1355
Gln Gly Ala Thr Ala Glu Gln Leu Val Asp Lys Asp Lys Glu Glu Asn			1360



Glu Leu Cys Leu Pro Gly Pro Asp Gly Lys Glu Cys Val Val Lys Glu  
 195 200 205  
 Val Val Pro Gly Asp Ser Val Asn Ser Leu Leu Ser Ile Leu Asp Val  
 210 215 220  
 Ile Thr Gly His Gln His Pro Gln Arg Thr Val Ser Ala Arg Ala Ala  
 225 230 235 240  
 Arg Asp Ser Thr Val Leu Arg Leu Pro Val Glu Ala Phe Ser Ala Val  
 245 250 255  
 Phe Thr Lys Tyr Pro Glu Ser Leu Val Arg Val Val Gln Ile Ile Met  
 260 265 270  
 Val Arg Leu Gln Arg Val Thr Phe Leu Ala Leu His Asn Tyr Leu Gly  
 275 280 285  
 Leu Thr Asn Glu Leu Phe Ser His Glu Ile Gln Pro Leu Arg Leu Phe  
 290 295 300  
 Pro Ser Pro Gly Leu Pro Thr Arg Thr Ser Pro Val Arg Gly Ser Lys  
 305 310 315 320  
 Arg Met Val Ser Thr Ser Ala Thr Asp Glu Pro Arg Glu Thr Pro Gly  
 325 330 335  
 Arg Pro Pro Asp Pro Thr Gly Ala Pro Leu Pro Gly Pro Thr Gly Asp  
 340 345 350  
 Pro Val Lys Pro Thr Ser Leu Glu Thr Pro Ser Ala Pro Leu Leu Ser  
 355 360 365  
 Arg Cys Val Ser Met Pro Gly Asp Ile Ser Gly Leu Gln Gly Gly Pro  
 370 375 380  
 Arg Ser Asp Phe Asp Met Ala Tyr Glu Arg Gly Arg Ile Ser Val Ser  
 385 390 395 400  
 Leu Gln Glu Glu Ala Ser Gly Gly Ser Leu Ala Ala Pro Ala Arg Thr  
 405 410 415  
 Pro Thr Gln Glu Pro Arg Glu Gln Pro Ala Gly Ala Cys Glu Tyr Ser  
 420 425 430  
 Tyr Cys Glu Asp Glu Ser Ala Thr Gly Gly Cys Pro Phe Gly Pro Tyr  
 435 440 445

Gln Gly Arg Gln Thr Ser Ser Ile Phe Glu Ala Ala Lys Gln Glu Leu  
 450 455 460  
 Ala Lys Leu Met Arg Ile Glu Asp Pro Ser Leu Leu Asn Ser Arg Val  
 465 470 475 480  
 Leu Leu His His Ala Lys Ala Gly Thr Ile Ile Ala Arg Gln Gly Asp  
 485 490 495  
 Gln Asp Val Ser Leu His Phe Val Leu Trp Gly Cys Leu His Val Tyr  
 500 505 510  
 Gln Arg Met Ile Asp Lys Ala Glu Asp Val Cys Leu Phe Val Ala Gln  
 515 520 525  
 Pro Gly Glu Leu Val Gly Gln Leu Ala Val Leu Thr Gly Glu Pro Leu  
 530 535 540  
 Ile Phe Thr Leu Arg Ala Gln Arg Asp Cys Thr Phe Leu Arg Ile Ser  
 545 550 555 560  
 Lys Ser Asp Phe Tyr Glu Ile Met Arg Ala Gln Pro Ser Val Val Leu  
 565 570 575  
 Ser Ala Ala His Thr Val Ala Ala Arg Met Ser Pro Phe Val Arg Gln  
 580 585 590  
 Met Asp Phe Ala Ile Asp Trp Thr Ala Val Glu Ala Gly Arg Ala Leu  
 595 600 605  
 Tyr Arg Gln Gly Asp Arg Ser Asp Cys Thr Tyr Ile Val Leu Asn Gly  
 610 615 620  
 Arg Leu Arg Ser Val Ile Gln Arg Gly Ser Gly Lys Lys Glu Leu Val  
 625 630 635 640  
 Gly Glu Tyr Gly Arg Gly Asp Leu Ile Gly Val Val Glu Ala Leu Thr  
 645 650 655  
 Arg Gln Pro Arg Ala Thr Thr Val His Ala Val Arg Asp Thr Glu Leu  
 660 665 670  
 Ala Lys Leu Pro Glu Gly Thr Leu Gly His Ile Lys Arg Arg Tyr Pro  
 675 680 685  
 Gln Val Val Thr Arg Leu Ile His Leu Leu Ser Gln Lys Ile Leu Gly  
 690 695 700

Asn Leu Gln Gln Leu Gln Gly Pro Phe Pro Ala Gly Ser Gly Leu Gly  
 705 710 715 720  
 Val Pro Pro His Ser Glu Leu Thr Asn Pro Ala Ser Asn Leu Ala Thr  
 725 730 735  
 Val Ala Ile Leu Pro Val Cys Ala Glu Val Pro Met Val Ala Phe Thr  
 740 745 750  
 Leu Glu Leu Gln His Ala Leu Gln Ala Ile Gly Pro Thr Leu Leu Leu  
 755 760 765  
 Asn Ser Asp Ile Ile Arg Ala Arg Leu Gly Ala Ser Ala Leu Asp Ser  
 770 775 780  
 Ile Gln Glu Phe Arg Leu Ser Gly Trp Leu Ala Gln Gln Glu Asp Ala  
 785 790 795 800  
 His Arg Ile Val Leu Tyr Gln Thr Asp Ala Ser Leu Thr Pro Trp Thr  
 805 810 815  
 Val Arg Cys Leu Arg Gln Ala Asp Cys Ile Leu Ile Val Gly Leu Gly  
 820 825 830  
 Asp Gln Glu Pro Thr Leu Gly Gln Leu Glu Gln Met Leu Glu Asn Thr  
 835 840 845  
 Ala Val Arg Ala Leu Lys Gln Leu Val Leu Leu His Arg Glu Glu Gly  
 850 855 860  
 Ala Gly Pro Thr Arg Thr Val Glu Trp Leu Asn Met Arg Ser Trp Cys  
 865 870 875 880  
 Ser Gly His Leu His Leu Arg Cys Pro Arg Arg Leu Phe Ser Arg Arg  
 885 890 895  
 Ser Pro Ala Lys Leu His Glu Leu Tyr Glu Lys Val Phe Ser Arg Arg  
 900 905 910  
 Ala Asp Arg His Ser Asp Phe Ser Arg Leu Ala Arg Val Leu Thr Gly  
 915 920 925  
 Asn Thr Ile Ala Leu Val Leu Gly Gly Gly Gly Ala Arg Gly Cys Ser  
 930 935 940  
 His Ile Gly Val Leu Lys Ala Leu Glu Glu Ala Gly Val Pro Val Asp  
 945 950 955 960



Leu Val Gly Gly Thr Ser Ile Gly Ser Phe Ile Gly Ala Leu Tyr Ala  
                     965                    970                    975

Glu Glu Arg Ser Ala Ser Arg Thr Lys Gln Arg Ala Arg Glu Trp Ala  
                     980                    985                    990

Lys Ser Met Thr Ser Val Leu Glu Pro Val Leu Asp Leu Thr Tyr Pro  
                     995                    1000                    1005

Val Thr Ser Met Phe Thr Gly Ser Ala Phe Asn Arg Ser Ile His Arg  
                     1010                    1015                    1020

Val Phe Gln Asp Lys Gln Ile Glu Asp Leu Trp Leu Pro Tyr Phe Asn  
                     1025                    1030                    1035                    1040

Val Thr Thr Asp Ile Thr Ala Ser Ala Met Arg Val His Lys Asp Gly  
                     1045                    1050                    1055

Ser Leu Trp Arg Tyr Val Arg Ala Ser Met Thr Leu Ser Gly Tyr Leu  
                     1060                    1065                    1070

Pro Pro Leu Cys Asp Pro Lys Asp Gly His Leu Leu Met Asp Gly Gly  
                     1075                    1080                    1085

Tyr Ile Asn Asn Leu Pro Ala Asp Ile Ala Arg Ser Met Gly Ala Lys  
                     1090                    1095                    1100

Thr Val Ile Ala Ile Asp Val Gly Ser Gln Asp Glu Thr Asp Leu Ser  
                     1105                    1110                    1115                    1120

Thr Tyr Gly Asp Ser Leu Ser Gly Trp Trp Leu Leu Trp Lys Arg Leu  
                     1125                    1130                    1135

Asn Pro Trp Ala Asp Lys Val Lys Val Pro Asp Met Ala Glu Ile Gln  
                     1140                    1145                    1150

Ser Arg Leu Ala Tyr Val Ser Cys Val Arg Gln Leu Glu Val Val Lys  
                     1155                    1160                    1165

Ser Ser Ser Tyr Cys Glu Tyr Leu Arg Pro Pro Ile Asp Cys Phe Lys  
                     1170                    1175                    1180

Thr Met Asp Phe Gly Lys Phe Asp Gln Ile Tyr Asp Val Gly Tyr Gln  
                     1185                    1190                    1195                    1200

Tyr Gly Lys Ala Val Phe Gly Gly Trp Ser Arg Gly Asn Val Ile Glu  
                     1205                    1210                    1215

Lys Met Leu Thr Asp Arg Arg Ser Thr Asp Leu Asn Glu Ser Arg Arg  
 1220 1225 1230  
 Ala Asp Val Leu Ala Phe Pro Ser Ser Gly Phe Thr Asp Leu Ala Glu  
 1235 1240 1245  
 Ile Val Ser Arg Ile Glu Pro Pro Thr Ser Tyr Val Ser Asp Gly Cys  
 1250 1255 1260  
 Ala Asp Gly Glu Glu Ser Asp Cys Leu Thr Glu Tyr Glu Glu Asp Ala  
 1265 1270 1275 1280  
 Gly Pro Asp Cys Ser Arg Asp Glu Gly Gly Ser Pro Glu Gly Ala Ser  
 1285 1290 1295  
 Pro Ser Thr Ala Ser Glu Met Glu Glu Glu Lys Ser Ile Leu Arg Gln  
 1300 1305 1310  
 Arg Arg Cys Leu Pro Gln Glu Pro Pro Gly Ser Ala Thr Asp Ala  
 1315 1320 1325  
  
 <210> 177  
 <211> 331  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 177  
 Pro Asp Arg His Ser Asp Phe Ser Arg Leu Ala Arg Val Leu Thr Gly  
 1 5 10 15  
 Asn Ala Ile Ala Leu Val Leu Gly Gly Gly Gly Ala Ser Met Thr Ser  
 20 25 30  
 Leu Met Lys Ala Ala Leu Asp Leu Thr Tyr Pro Ile Thr Ser Met Phe  
 35 40 45  
 Ser Gly Ala Gly Phe Asn Ser Ser Ile Phe Ser Val Phe Lys Asp Gln  
 50 55 60  
 Gln Ile Glu Asp Leu Trp Ile Pro Tyr Phe Ala Ile Thr Thr Asp Ile  
 65 70 75 80  
 Thr Ala Ser Ala Met Arg Val His Thr Asp Gly Ser Leu Trp Trp Tyr  
 85 90 95  
 Val Arg Ala Ser Met Ser Leu Ser Gly Tyr Met Pro Pro Leu Cys Asp  
 100 105 110

Pro Lys Asp Gly His Leu Leu Met Asp Gly Gly Tyr Ile Asn Asn Leu  
115 120 125

Pro Ala Ala Ser Ala Pro Arg Ser Leu Gly Trp Asn Thr Phe Ser Leu  
130 135 140

Glu Tyr Ala Lys Gly Lys Cys Gln Ala Gly Ile Arg Ala Pro Arg Thr  
145 150 155 160

Cys Thr Arg Val Tyr Met His Thr Gln Ala Pro Ala Ala Cys Ala Pro  
165 170 175

Ala Tyr Gly Pro Val Cys Gln Leu Ser Ser Met Gln Asn Lys Gly Gln  
180 185 190

Val Glu Glu Leu Gly Ala Ile Lys Pro His Leu Cys Pro Gln Ser Glu  
195 200 205

Thr Asn Ser Leu Gln Gly Val Thr Arg Ala Gly Phe Ser Leu Ala Asp  
210 215 220

Val Ala Arg Ser Met Gly Ala Lys Val Val Ile Ala Ile Asp Val Gly  
225 230 235 240

Ser Arg Asp Glu Thr Asp Leu Thr Asn Tyr Gly Asp Ala Leu Ser Gly  
245 250 255

Trp Trp Leu Leu Trp Lys Arg Trp Asn Pro Leu Ala Thr Lys Val Lys  
260 265 270

Val Leu Asn Met Ala Glu Ile Gln Thr Arg Leu Ala Tyr Val Cys Cys  
275 280 285

Val Arg Gln Leu Glu Val Val Lys Ser Ser Asp Tyr Cys Glu Tyr Leu  
290 295 300

Arg Pro Pro Ile Asp Ser Tyr Ser Thr Leu Asp Phe Gly Lys Phe Asn  
305 310 315 320

Glu Ile Cys Glu Val Gly Tyr Gln His Gly Arg  
325 330

<210> 178

<211> 289

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: UPF0028 domain  
sequence

<400> 178

Ile Ala Phe Gln Ser Asp Phe Ser Arg Leu Ala Arg Ile Leu Thr Gly  
1 5 10 15

Asn Ala Ile Gly Leu Val Leu Gly Gly Gly Gly Ala Arg Gly Ala Ala  
20 25 30

His Ile Gly Val Ile Gln Ala Leu Lys Glu Val Gly Ile Pro Ile Asp  
35 40 45

Ile Val Gly Gly Thr Ser Ile Gly Ser Leu Val Gly Ala Leu Tyr Ala  
50 55 60

Cys Asp Pro Asp Ser Val Leu Val Asp Ala Arg Ala Lys Trp Phe Phe  
65 70 75 80

Ser Gly Ser Ser Ser Ile Trp Asp Arg Leu Met Asp Leu Thr Trp Pro  
85 90 95

Arg Ser Gly Leu Leu Thr Gly His Arg Phe Asn Arg Gln Val Gln Glu  
100 105 110

Ile Phe Gly Glu Thr Leu Ile Glu Asp Cys Trp Arg Ser Phe Phe Cys  
115 120 125

Val Ser Thr Asp Leu Ser Thr Ser Arg Gln Arg Ile His Arg Glu Gly  
130 135 140

Asp Leu Trp Leu Ala Ile Arg Ala Ser Met Ser Ile Ala Gly Leu Leu  
145 150 155 160

Pro Pro Val Cys Gln Asn Gly His Leu Leu Leu Asp Gly Gly Tyr Val  
165 170 175

Asn Asn Leu Pro Ala Asp Val Met Arg Ala Leu Gly Ala Asp Ile Val  
180 185 190

Ile Ala Val Asp Val Gly Ser Ala Asp Leu Thr Asn Leu Asp Leu Tyr  
195 200 205

Gly Phe Ser Leu Ser Gly Glu Trp Ile Leu Phe Lys Arg Trp Asn Pro  
210 215 220

Phe Gly Ala Arg Leu Arg Ile Leu Asn Met Ser Glu Ile Gln Arg Arg  
 225 230 235 240

Leu Ala Tyr Val Pro Cys Val Arg Ala Leu Glu Thr Ala Lys Asn Thr  
 245 250 255

Val Tyr Cys Arg Tyr Leu Lys Arg Pro Ile Glu Ala Phe Asp Thr Leu  
 260 265 270

Asp Phe Ser Lys Phe Pro Glu Ile Pro Gln Ile Gly Val Leu Tyr Phe  
 275 280 285

Lys

<210> 179

<211> 94

<212> PRT

<213> Homo sapiens

<400> 179

Ala Leu Asp Trp Val Glu Val Glu Ala Gly Arg Ala Ile Tyr Arg Gln  
 1 5 10 15

Gly Asp Lys Ser Asp Cys Thr Tyr Ile Met Leu Ser Gly Arg Leu Arg  
 20 25 30

Ser Val Ile Arg Lys Asp Asp Gly Lys Lys Arg Leu Ala Gly Glu Tyr  
 35 40 45

Gly Arg Gly Asp Leu Val Gly Val Val Glu Thr Leu Thr His Gln Ala  
 50 55 60

Arg Ala Thr Thr Val His Ala Val Arg Asp Ser Glu Leu Ala Lys Leu  
 65 70 75 80

Pro Ala Gly Ala Leu Thr Cys Ile Lys Arg Arg Tyr Pro Gln  
 85 90

<210> 180

<211> 94

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Cyclic

nucleotide-binding domain sequence

<400> 180

Ala Leu Glu Glu Arg Ser Tyr Pro Ala Gly Glu Val Ile Ile Arg Gln  
1 5 10 15

Gly Asp Pro Gly Asp Ser Leu Tyr Ile Val Val Ser Gly Ser Val Glu  
20 25 30

Val Tyr Arg Leu Leu Glu Asp Gly Arg Glu Gln Ile Val Gly Thr Leu  
35 40 45

Gly Pro Gly Asp Leu Phe Gly Glu Leu Ala Leu Leu Thr Asn Pro Pro  
50 55 60

Arg Thr Ala Thr Val Arg Ala Leu Thr Asp Cys Glu Leu Leu Arg Leu  
65 70 75 80

Asp Arg Glu Asp Phe Glu Arg Leu Leu Glu Gln Tyr Pro Glu  
85 90

<210> 181

<211> 89

<212> PRT

<213> Homo sapiens

<400> 181

His Val Pro Ala Gly Thr Val Val Ser Arg Gln Gly Asp Gln Asp Ala  
1 5 10 15

Ser Ile Leu Phe Val Val Ser Gly Leu Leu His Val Tyr Gln Arg Lys  
20 25 30

Ile Gly Ser Gln Glu Asp Thr Cys Leu Phe Leu Thr Arg Pro Gly Glu  
35 40 45

Met Val Gly Gln Leu Ala Val Leu Thr Gly Glu Pro Leu Ile Phe Thr  
50 55 60

Val Lys Ala Asn Arg Asp Cys Ser Phe Leu Ser Ile Ser Lys Ala His  
65 70 75 80

Phe Tyr Glu Ile Met Arg Lys Gln Pro  
85

<210> 182

<211> 88  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Cyclic  
nucleotide-binding domain sequence

<400> 182

Ser Tyr Pro Ala Gly Glu Val Ile Ile Arg Gln Gly Asp Pro Gly Asp  
1 5 10 15

Ser Leu Tyr Ile Val Val Ser Gly Ser Val Glu Val Tyr Arg Leu Leu  
20 25 30

Glu Asp Gly Arg Glu Gln Ile Val Gly Thr Leu Gly Pro Gly Asp Leu  
35 40 45

Phe Gly Glu Leu Ala Leu Leu Thr Asn Pro Pro Arg Thr Ala Thr Val  
50 55 60

Arg Ala Leu Thr Asp Cys Glu Leu Leu Arg Leu Asp Arg Glu Asp Phe  
65 70 75 80

Glu Arg Leu Leu Glu Gln Tyr Pro  
85

<210> 183  
<211> 101  
<212> PRT  
<213> Homo sapiens

<400> 183

His Ile Val Phe Val Gln Leu Gln Glu Gly Glu His Val Phe Gln Pro  
1 5 10 15

Arg Glu Pro Asp Pro Ser Ile Cys Val Val Gln Asp Gly Arg Leu Glu  
20 25 30

Val Cys Ile Gln Asp Thr Asp Gly Thr Glu Val Val Val Lys Glu Val  
35 40 45

Leu Ala Gly Asp Ser Val His Ser Leu Leu Ser Ile Leu Asp Ile Ile  
50 55 60

Thr Gly His Ala Ala Pro Tyr Lys Thr Val Ser Val Arg Ala Ala Ile  
65 70 75 80

Pro Ser Thr Ile Leu Arg Leu Pro Ala Ala Ala Phe His Gly Val Phe  
85 90 95

Glu Lys Tyr Pro Glu  
100

<210> 184

<211> 94

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Cyclic  
nucleotide-binding domain sequence

<400> 184

Ala Leu Glu Glu Arg Ser Tyr Pro Ala Gly Glu Val Ile Ile Arg Gln  
1 5 10 15

Gly Asp Pro Gly Asp Ser Leu Tyr Ile Val Val Ser Gly Ser Val Glu  
20 25 30

Val Tyr Arg Leu Leu Glu Asp Gly Arg Glu Gln Ile Val Gly Thr Leu  
35 40 45

Gly Pro Gly Asp Leu Phe Gly Glu Leu Ala Leu Leu Thr Asn Pro Pro  
50 55 60

Arg Thr Ala Thr Val Arg Ala Leu Thr Asp Cys Glu Leu Leu Arg Leu  
65 70 75 80

Asp Arg Glu Asp Phe Glu Arg Leu Leu Glu Gln Tyr Pro Glu  
85 90

<210> 185

<211> 115

<212> PRT

<213> Homo sapiens

<400> 185

Ser Phe Val Arg Gln Ile Asp Phe Ala Leu Asp Trp Val Glu Val Glu  
1 5 10 15

Ala Gly Arg Ala Ile Tyr Arg Gln Gly Asp Lys Ser Asp Cys Thr Tyr  
20 25 30



Ile Met Leu Ser Gly Arg Leu Arg Ser Val Ile Arg Lys Asp Asp Gly  
           35                          40                          45  
 Lys Lys Arg Leu Ala Gly Glu Tyr Gly Arg Gly Asp Leu Val Gly Val  
           50                          55                          60  
 Val Glu Thr Leu Thr His Gln Ala Arg Ala Thr Thr Val His Ala Val  
           65                          70                          75                          80  
 Arg Asp Ser Glu Leu Ala Lys Leu Pro Ala Gly Ala Leu Thr Cys Ile  
                           85                          90                          95  
 Lys Arg Arg Tyr Pro Gln Val Val Thr Arg Leu Ile His Leu Leu Gly  
                           100                          105                          110  
 Glu Lys Ile  
           115

<210> 186  
 <211> 114  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Cyclic  
           nucleotide-binding domain sequence

<400> 186  
 Glu Glu Leu Arg Glu Leu Ala Asp Ala Leu Glu Pro Val Arg Tyr Pro  
   1                          5                          10                          15  
 Ala Gly Glu Val Ile Ile Arg Gln Gly Asp Val Gly Asp Ser Phe Tyr  
           20                          25                          30  
 Ile Ile Val Ser Gly Glu Val Glu Val Tyr Lys Thr Leu Glu Asp Gly  
           35                          40                          45  
 Arg Glu Gln Ile Leu Gly Thr Leu Gly Pro Gly Asp Phe Phe Gly Glu  
           50                          55                          60  
 Leu Ala Leu Leu Thr Asn Arg Arg Arg Ala Arg Ser Ala Ala Ala Val  
           65                          70                          75                          80  
 Ala Leu Glu Leu Ala Lys Leu Leu Arg Ile Asp Phe Arg Asp Phe Leu  
                           85                          90                          95

Gln Leu Leu Pro Glu Ile Pro Gln Leu Leu Glu Leu Leu Leu Glu  
100 105 110

Leu Ala

<210> 187

<211> 123

<212> PRT

<213> Homo sapiens

<400> 187

Val Leu Gly His Phe Glu Lys Pro Leu Phe Leu Glu Leu Cys Lys His  
1 5 10 15

Ile Val Phe Val Gln Leu Gln Glu Gly Glu His Val Phe Gln Pro Arg  
20 25 30

Glu Pro Asp Pro Ser Ile Cys Val Val Gln Asp Gly Arg Leu Glu Val  
35 40 45

Cys Ile Gln Asp Thr Asp Gly Thr Glu Val Val Val Lys Glu Val Leu  
50 55 60

Ala Gly Asp Ser Val His Ser Leu Leu Ser Ile Leu Asp Ile Ile Thr  
65 70 75 80

Gly His Ala Ala Pro Tyr Lys Thr Val Ser Val Arg Ala Ala Ile Pro  
85 90 95

Ser Thr Ile Leu Arg Leu Pro Ala Ala Ala Phe His Gly Val Phe Glu  
100 105 110

Lys Tyr Pro Glu Thr Leu Val Arg Val Val Gln  
115 120

<210> 188

<211> 118

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Cyclic  
nucleotide-binding domain sequence

<400> 188

Leu Phe Lys Ala Leu Asp Ala Glu Glu Leu Arg Glu Leu Ala Asp Ala  
 1 5 10 15  
 Leu Glu Pro Val Arg Tyr Pro Ala Gly Glu Val Ile Ile Arg Gln Gly  
 20 25 30  
 Asp Val Gly Asp Ser Phe Tyr Ile Ile Val Ser Gly Glu Val Glu Val  
 35 40 45  
 Tyr Lys Thr Leu Glu Asp Gly Arg Glu Gln Ile Leu Gly Thr Leu Gly  
 50 55 60  
 Pro Gly Asp Phe Phe Gly Glu Leu Ala Leu Leu Thr Asn Arg Arg Arg  
 65 70 75 80  
 Ala Arg Ser Ala Ala Ala Val Ala Leu Glu Leu Ala Lys Leu Leu Arg  
 85 90 95  
 Ile Asp Phe Arg Asp Phe Leu Gln Leu Leu Pro Glu Ile Pro Gln Leu  
 100 105 110  
 Leu Leu Glu Leu Leu Leu  
 115

<210> 189  
 <211> 89  
 <212> PRT  
 <213> Homo sapiens

<400> 189  
 His Val Pro Ala Gly Thr Val Val Ser Arg Gln Gly Asp Gln Asp Ala  
 1 5 10 15  
 Ser Ile Leu Phe Val Val Ser Gly Leu Leu His Val Tyr Gln Arg Lys  
 20 25 30  
 Ile Gly Ser Gln Glu Asp Thr Cys Leu Phe Leu Thr Arg Pro Gly Glu  
 35 40 45  
 Met Val Gly Gln Leu Ala Val Leu Thr Gly Glu Pro Leu Ile Phe Thr  
 50 55 60  
 Val Lys Ala Asn Arg Asp Cys Ser Phe Leu Ser Ile Ser Lys Ala His  
 65 70 75 80  
 Phe Tyr Glu Ile Met Arg Lys Gln Pro  
 85

<210> 190  
<211> 90  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Cyclic  
nucleotide-binding domain sequence

<400> 190  
Arg Tyr Pro Ala Gly Glu Val Ile Ile Arg Gln Gly Asp Val Gly Asp  
1 5 10 15  
Ser Phe Tyr Ile Ile Val Ser Gly Glu Val Glu Val Tyr Lys Thr Leu  
20 25 30  
Glu Asp Gly Arg Glu Gln Ile Leu Gly Thr Leu Gly Pro Gly Asp Phe  
35 40 45  
Phe Gly Glu Leu Ala Leu Leu Thr Asn Arg Arg Arg Ala Arg Ser Ala  
50 55 60  
Ala Ala Val Ala Leu Glu Leu Ala Lys Leu Leu Arg Ile Asp Phe Arg  
65 70 75 80  
Asp Phe Leu Gln Leu Leu Pro Glu Ile Pro  
85 90

<210> 191  
<211> 330  
<212> PRT  
<213> Homo sapiens

<400> 191  
Met Arg Arg Pro Ser Val Arg Ala Ala Gly Leu Val Leu Cys Thr Leu  
1 5 10 15  
Cys Tyr Leu Leu Val Gly Ala Ala Val Phe Asp Ala Leu Glu Ser Glu  
20 25 30  
Ala Glu Ser Gly Arg Gln Arg Leu Leu Val Gln Lys Arg Gly Ala Leu  
35 40 45  
Arg Arg Lys Phe Gly Phe Ser Ala Glu Asp Tyr Arg Glu Leu Glu Arg  
50 55 60

Leu Ala Leu Gln Ala Glu Pro His Arg Ala Gly Arg Gln Trp Lys Phe  
 65 70 75 80  
 Pro Gly Ser Phe Tyr Phe Ala Ile Thr Val Ile Thr Thr Ile Glu Tyr  
 85 90 95  
 Gly His Ala Ala Pro Gly Thr Asp Ser Gly Lys Val Phe Cys Met Phe  
 100 105 110  
 Tyr Ala Leu Leu Gly Ile Pro Leu Thr Leu Val Thr Phe Gln Ser Leu  
 115 120 125  
 Gly Glu Arg Leu Asn Ala Val Val Arg Arg Leu Leu Leu Ala Ala Lys  
 130 135 140  
 Cys Cys Leu Gly Leu Arg Trp Thr Cys Val Ser Thr Glu Asn Leu Val  
 145 150 155 160  
 Val Ala Gly Leu Leu Ala Cys Ala Ala Thr Leu Ala Leu Gly Ala Val  
 165 170 175  
 Ala Phe Ser His Phe Glu Gly Trp Thr Phe Phe His Ala Tyr Tyr Tyr  
 180 185 190  
 Cys Phe Ile Thr Leu Thr Thr Ile Gly Phe Gly Asp Phe Val Ala Leu  
 195 200 205  
 Gln Ser Gly Glu Ala Leu Gln Arg Lys Leu Pro Tyr Val Ala Phe Ser  
 210 215 220  
 Phe Leu Tyr Ile Leu Leu Gly Leu Thr Val Ile Gly Ala Phe Leu Asn  
 225 230 235 240  
 Leu Val Val Leu Arg Phe Leu Val Ala Ser Ala Asp Trp Pro Glu Arg  
 245 250 255  
 Ala Ala Arg Thr Pro Ser Pro Arg Pro Pro Gly Ala Pro Glu Ser Arg  
 260 265 270  
 Gly Leu Trp Leu Pro Arg Arg Pro Ala Arg Ser Val Gly Ser Ala Ser  
 275 280 285  
 Val Phe Cys His Val His Lys Leu Glu Arg Cys Ala Arg Asp Asn Leu  
 290 295 300  
 Gly Phe Ser Pro Pro Ser Ser Pro Gly Val Val Arg Gly Gly Gln Ala  
 305 310 315 320

Pro Arg Leu Gly Ala Arg Trp Lys Ser Ile  
 325 330

<210> 192  
 <211> 330  
 <212> PRT  
 <213> Homo sapiens

<400> 192  
 Met Arg Arg Pro Ser Val Arg Ala Ala Gly Leu Val Leu Cys Thr Leu  
 1 5 10 15

Cys Tyr Leu Leu Val Gly Ala Ala Val Phe Asp Ala Leu Glu Ser Glu  
 20 25 30

Ala Glu Ser Gly Arg Gln Arg Leu Leu Val Gln Lys Arg Gly Ala Leu  
 35 40 45

Arg Arg Lys Phe Gly Phe Ser Ala Glu Asp Tyr Arg Glu Leu Glu Arg  
 50 55 60

Leu Ala Leu Gln Ala Glu Pro His Arg Ala Gly Arg Gln Trp Lys Phe  
 65 70 75 80

Pro Gly Ser Phe Tyr Phe Ala Ile Thr Val Ile Thr Thr Ile Gly Tyr  
 85 90 95

Gly His Ala Ala Pro Gly Thr Asp Ser Gly Lys Val Phe Cys Met Phe  
 100 105 110

Tyr Ala Leu Leu Gly Ile Pro Leu Thr Leu Val Thr Phe Gln Ser Leu  
 115 120 125

Gly Glu Arg Leu Asn Ala Val Val Arg Arg Leu Leu Leu Ala Ala Lys  
 130 135 140

Cys Cys Leu Gly Leu Arg Trp Thr Cys Val Ser Thr Glu Asn Leu Val  
 145 150 155 160

Val Ala Gly Leu Leu Ala Cys Ala Ala Thr Leu Ala Leu Gly Ala Val  
 165 170 175

Ala Phe Ser His Phe Glu Gly Trp Thr Phe Phe His Ala Tyr Tyr Tyr  
 180 185 190

Cys Phe Ile Thr Leu Thr Thr Ile Gly Phe Gly Asp Phe Val Ala Leu

195	200	205
Gln Ser Gly Glu Ala Leu Gln Arg Lys Leu Pro Tyr Val Ala Phe Ser		
210	215	220
Phe Leu Tyr Ile Leu Leu Gly Leu Thr Val Ile Gly Ala Phe Leu Asn		
225	230	235 240
Leu Val Val Leu Arg Phe Leu Val Ala Ser Ala Asp Trp Pro Glu Arg		
	245	250 255
Ala Ala Arg Pro Pro Ser Pro Arg Pro Pro Gly Ala Pro Glu Ser Arg		
	260	265 270
Gly Leu Trp Leu Pro Arg Arg Pro Ala Arg Ser Val Gly Ser Ala Ser		
	275	280 285
Val Phe Cys His Val His Lys Leu Glu Arg Cys Ala Arg Asp Asn Leu		
	290	295 300
Gly Phe Ser Pro Pro Ser Ser Pro Gly Val Val Arg Gly Gly Gln Ala		
305	310	315 320
Pro Arg Pro Gly Ala Arg Trp Lys Ser Ile		
	325	330

<210> 193  
 <211> 330  
 <212> PRT  
 <213> Homo sapiens

<400> 193
Met Arg Arg Pro Ser Val Arg Ala Ala Gly Leu Val Leu Cys Thr Leu
1 5 10 15
Cys Tyr Leu Leu Val Gly Ala Ala Val Phe Asp Ala Leu Glu Ser Glu
20 25 30
Ala Glu Ser Gly Arg Gln Arg Leu Leu Val Gln Lys Arg Gly Ala Leu
35 40 45
Arg Arg Lys Phe Gly Phe Ser Ala Glu Asp Tyr Arg Glu Leu Glu Arg
50 55 60
Leu Ala Leu Gln Ala Glu Pro His Arg Ala Gly Arg Gln Trp Lys Phe
65 70 75 80





<210> 194  
 <211> 374  
 <212> PRT  
 <213> Homo sapiens

<400> 194

Met	Lys	Arg	Gln	Asn	Val	Arg	Thr	Leu	Ser	Leu	Ile	Val	Cys	Thr	Phe
1				5					10					15	
Thr	Tyr	Leu	Leu	Val	Gly	Ala	Ala	Val	Phe	Asp	Ala	Leu	Glu	Ser	Asp
			20					25					30		
His	Glu	Met	Arg	Glu	Glu	Glu	Lys	Leu	Lys	Ala	Glu	Glu	Ile	Arg	Ile
		35					40						45		
Lys	Gly	Lys	Tyr	Asn	Ile	Ser	Ser	Glu	Asp	Tyr	Arg	Gln	Leu	Glu	Leu
	50					55					60				
Val	Ile	Leu	Gln	Ser	Glu	Pro	His	Arg	Ala	Gly	Val	Gln	Trp	Lys	Phe
65					70					75					80
Ala	Gly	Ser	Phe	Tyr	Phe	Ala	Ile	Thr	Val	Ile	Thr	Thr	Ile	Gly	Tyr
			85						90					95	
Gly	His	Ala	Ala	Pro	Gly	Thr	Asp	Ala	Gly	Lys	Ala	Phe	Cys	Met	Phe
		100						105					110		
Tyr	Ala	Val	Leu	Gly	Ile	Pro	Leu	Thr	Leu	Val	Met	Phe	Gln	Ser	Leu
	115					120						125			
Gly	Glu	Arg	Met	Asn	Thr	Phe	Val	Arg	Tyr	Leu	Leu	Lys	Arg	Ile	Lys
	130					135						140			
Lys	Cys	Cys	Gly	Met	Arg	Asn	Thr	Asp	Val	Ser	Met	Glu	Asn	Met	Val
145					150					155					160
Thr	Val	Gly	Phe	Phe	Ser	Cys	Met	Gly	Thr	Leu	Cys	Ile	Gly	Ala	Ala
			165						170					175	
Ala	Phe	Ser	Gln	Cys	Glu	Glu	Trp	Ser	Phe	Phe	His	Ala	Tyr	Tyr	Tyr
			180					185					190		
Cys	Phe	Ile	Thr	Leu	Thr	Thr	Ile	Gly	Phe	Gly	Asp	Tyr	Val	Ala	Leu
	195						200					205			
Gln	Thr	Lys	Gly	Ala	Leu	Gln	Lys	Lys	Pro	Leu	Tyr	Val	Ala	Phe	Ser
	210					215						220			

Phe Met Tyr Ile Leu Val Gly Leu Thr Val Ile Gly Ala Phe Leu Asn  
 225 230 235 240  
 Leu Val Val Leu Arg Phe Leu Thr Met Asn Ser Glu Asp Glu Arg Arg  
 245 250 255  
 Asp Ala Glu Glu Arg Ala Ser Leu Ala Gly Asn Arg Asn Ser Met Val  
 260 265 270  
 Ile His Ile Pro Glu Glu Pro Arg Pro Ser Arg Pro Arg Tyr Lys Ala  
 275 280 285  
 Asp Val Pro Asp Leu Gln Ser Val Cys Ser Cys Thr Cys Tyr Arg Ser  
 290 295 300  
 Gln Asp Tyr Gly Gly Arg Ser Val Ala Pro Gln Asn Ser Phe Ser Ala  
 305 310 315 320  
 Lys Leu Ala Pro His Tyr Phe His Ser Ile Ser Tyr Lys Ile Glu Glu  
 325 330 335  
 Ile Ser Pro Ser Thr Leu Lys Asn Ser Leu Phe Pro Ser Pro Ile Ser  
 340 345 350  
 Ser Ile Ser Pro Gly Leu His Ser Phe Thr Asp His Gln Arg Leu Met  
 355 360 365  
 Lys Arg Arg Lys Ser Val  
 370

<210> 195  
 <211> 387  
 <212> PRT  
 <213> Cavia porcellus

<400> 195  
 Met Lys Lys Gln Asn Val Arg Thr Leu Ser Leu Ile Ala Cys Thr Phe  
 1 5 10 15  
 Thr Tyr Leu Leu Val Gly Ala Ala Val Phe Asp Ala Leu Glu Ser Asp  
 20 25 30  
 His Glu Met Arg Glu Glu Glu Lys Leu Lys Ala Glu Glu Ile Arg Ile  
 35 40 45  
 Arg Gly Lys Tyr Asn Ile Ser Thr Glu Asp Tyr Arg Gln Leu Glu Leu

50 55 60

Val Ile Leu Gln Ser Glu Pro His Arg Ala Gly Val Gln Trp Lys Phe  
65 70 75 80

Ala Gly Ser Phe Tyr Phe Ala Ile Thr Val Ile Thr Thr Ile Gly Tyr  
85 90 95

Gly His Ala Ala Pro Gly Thr Asp Ala Gly Lys Ala Phe Cys Met Phe  
100 105 110

Tyr Ala Val Leu Gly Ile Pro Leu Thr Leu Val Met Phe Gln Ser Leu  
115 120 125

Gly Glu Arg Met Asn Thr Phe Val Arg Tyr Leu Leu Lys Arg Ile Lys  
130 135 140

Lys Cys Cys Gly Met Arg Asn Thr Glu Val Ser Met Glu Asn Met Val  
145 150 155 160

Thr Val Gly Phe Phe Ser Cys Met Gly Thr Leu Cys Ile Gly Ala Ala  
165 170 175

Ala Phe Ser Gln Cys Glu Glu Trp Ser Phe Phe His Ala Tyr Tyr Tyr  
180 185 190

Cys Phe Ile Thr Leu Thr Thr Ile Gly Phe Gly Asp Tyr Val Ala Leu  
195 200 205

Gln Ser Lys Gly Ala Leu Gln Arg Lys Pro Phe Tyr Val Ala Phe Ser  
210 215 220

Phe Met Tyr Ile Leu Val Gly Leu Thr Val Ile Gly Ala Phe Leu Asn  
225 230 235 240

Leu Val Val Leu Arg Phe Leu Thr Met Asn Ser Asp Glu Glu Arg Gly  
245 250 255

Glu Gly Glu Glu Gly Ala Ala Leu Pro Gly Asn Pro Ser Ser Val Val  
260 265 270

Thr His Ile Ser Glu Glu Ala Arg Gln Val Arg Gln Arg Tyr Arg Gly  
275 280 285

Glu Gly Gly Asp Leu Gln Ser Val Cys Ser Cys Ala Cys Tyr Arg Ser  
290 295 300

Gln Pro Gln Asn Phe Gly His Lys Leu Glu Arg Cys Ala Arg Asp Asn



Ala Ser Gly Asn Tyr Ala Thr Val Ile Ser His Asn Pro Glu Thr Lys  
 130 135 140  
 Lys Thr Arg Val Lys Leu Pro Ser Gly Ser Lys Lys Val Ile Ser Ser  
 145 150 155 160  
 Ala Asn Arg Ala Ile Val Gly Val Val Ala Gly Gly Gly Arg Ile Asp  
 165 170 175  
 Lys Pro Ile Leu Lys Ala Gly Arg Ala Tyr His Lys Tyr Lys Ala Lys  
 180 185 190  
 Arg Asn Cys Trp Pro Arg Val Arg Gly Val Ala Met Asn Pro Val Glu  
 195 200 205  
 His Pro Phe Gly Gly Gly Asn His Gln His Ile Gly Lys Pro Ser Thr  
 210 215 220  
 Ile Arg Arg Asp Ala Pro Ala Gly Arg Lys Val Gly Leu Ile Ala Ala  
 225 230 235 240  
 Arg Arg Thr Gly Arg Leu Arg Gly Thr Lys Thr Val Gln Glu Lys Glu  
 245 250 255  
 Asn

<210> 197  
 <211> 257  
 <212> PRT  
 <213> Homo sapiens

<400> 197  
 Met Gly Arg Val Ile Arg Gly Gln Arg Lys Gly Ala Gly Ser Val Phe  
 1 5 10 15  
 Arg Ala His Val Lys His Arg Lys Gly Ala Ala Arg Leu Arg Ala Val  
 20 25 30  
 Asp Phe Ala Glu Arg His Gly Tyr Ile Lys Gly Ile Val Lys Asp Ile  
 35 40 45  
 Ile His Asp Pro Gly Arg Gly Ala Pro Leu Ala Lys Val Val Phe Arg  
 50 55 60  
 Asp Pro Tyr Arg Phe Lys Lys Arg Thr Glu Leu Phe Ile Ala Ala Glu  
 65 70 75 80

Gly Ile His Thr Gly Gln Phe Val Tyr Cys Gly Lys Lys Ala Gln Leu  
 85 90 95  
 Asn Ile Gly Asn Val Leu Pro Val Gly Thr Met Pro Glu Gly Thr Ile  
 100 105 110  
 Val Cys Cys Leu Glu Glu Lys Pro Gly Asp Arg Gly Lys Leu Ala Arg  
 115 120 125  
 Ala Ser Gly Asn Tyr Ala Thr Val Ile Ser His Asn Pro Glu Thr Lys  
 130 135 140  
 Lys Thr Arg Val Lys Leu Pro Ser Gly Ser Lys Lys Val Ile Ser Ser  
 145 150 155 160  
 Ala Asn Arg Ala Val Val Gly Val Val Ala Gly Gly Gly Arg Ile Asp  
 165 170 175  
 Lys Pro Ile Leu Lys Ala Gly Arg Ala Tyr His Lys Tyr Lys Ala Lys  
 180 185 190  
 Arg Asn Cys Trp Pro Arg Val Arg Gly Val Ala Met Asn Pro Val Glu  
 195 200 205  
 His Pro Phe Gly Gly Gly Asn His Gln His Ile Gly Lys Pro Ser Thr  
 210 215 220  
 Ile Arg Arg Asp Ala Pro Ala Gly Arg Lys Val Gly Leu Ile Ala Ala  
 225 230 235 240  
 Arg Arg Thr Gly Arg Leu Arg Gly Thr Lys Thr Val Gln Glu Lys Glu  
 245 250 255

Asn

<210> 198

<211> 257

<212> PRT

<213> Homo sapiens

<400> 198

Met Gly Arg Val Ile Arg Gly Gln Arg Lys Gly Ala Gly Ser Val Phe  
 1 5 10 15

Arg Ala His Val Lys His Arg Lys Gly Ala Ala Arg Leu Arg Ala Val

	20		25		30
Asp Phe Ala Glu Arg His Gly Tyr Ile Lys Gly Ile Val Lys Asp Ile	35		40		45
Ile His Asp Pro Gly Arg Gly Ala Pro Leu Ala Lys Val Val Phe Arg	50		55		60
Asp Pro Tyr Arg Phe Lys Lys Arg Thr Glu Leu Phe Ile Ala Ala Glu	65		70		75
					80
Gly Ile His Thr Gly Gln Phe Val Tyr Cys Gly Lys Lys Ala Gln Leu		85		90	95
Asn Val Gly Asn Val Leu Pro Val Gly Thr Met Pro Glu Gly Thr Ile	100		105		110
Val Cys Cys Leu Glu Glu Lys Pro Gly Asp Arg Gly Lys Leu Ala Arg	115		120		125
Ala Ser Gly Asn Tyr Ala Thr Val Ile Ser His Asn Pro Glu Thr Lys	130		135		140
Lys Thr Arg Val Lys Leu Pro Ser Gly Ser Lys Lys Val Ile Ser Ser	145		150		155
					160
Ala Asn Arg Ala Val Val Gly Val Val Ala Gly Gly Gly Arg Ile Asp		165		170	175
Lys Pro Ile Leu Lys Ala Gly Arg Ala Tyr His Lys Tyr Lys Ala Lys	180		185		190
Arg Asn Cys Trp Pro Arg Val Arg Gly Val Ala Met Asn Pro Val Glu	195		200		205
His Pro Phe Gly Gly Gly Asn His Gln His Ile Gly Lys Pro Ser Thr	210		215		220
Ile Arg Arg Asp Ala Pro Ala Gly Arg Lys Val Gly Leu Ile Ala Ala	225		230		235
					240
Arg Arg Thr Gly Arg Leu Arg Gly Thr Lys Thr Val Gln Glu Lys Glu		245		250	255
Asn					

<210> 199  
 <211> 257  
 <212> PRT  
 <213> Ictalurus punctatus

<400> 199

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Met Gly Arg Val Ile Arg Ala Gln Arg Lys Gly Ala Gly Ser Val Phe
  1             5             10             15

Lys Ala His Val Lys His Arg Lys Gly Ala Ala Lys Leu Arg His Ile
      20             25             30

Asp Phe Ala Glu Arg His Gly Tyr Ile Lys Gly Ile Val Lys Asp Ile
      35             40             45

Ile His Asp Pro Gly Arg Gly Thr Pro Leu Ala Lys Val Val Phe Arg
      50             55             60

Asp Pro Tyr Arg Phe Lys Lys Arg Thr Glu Leu Phe Ile Ala Ala Glu
      65             70             75             80

Gly Ile His Thr Gly Gln Phe Val Phe Cys Gly Lys Lys Ala Gln Leu
      85             90             95

Asn Ile Gly Asn Val Leu Pro Val Gly Val Met Pro Glu Gly Thr Ile
      100            105            110

Ile Cys Cys Leu Glu Glu Lys Pro Gly Asp Arg Gly Lys Leu Ala Arg
      115            120            125

Ala Ser Gly Asn Tyr Ala Thr Val Ile Ser His Asn Pro Glu Thr Lys
      130            135            140

Lys Ser Arg Val Lys Leu Pro Ser Gly Ala Lys Lys Val Ile Ser Ser
      145            150            155            160

Thr Asn Arg Ala Val Val Gly Val Val Ala Gly Gly Gly Arg Ile Asp
      165            170            175

Lys Pro Ile Leu Lys Ala Gly Arg Ala Tyr His Lys Tyr Lys Val Lys
      180            185            190

Arg Asn Cys Trp Pro Arg Val Arg Gly Val Ala Met Asn Pro Val Glu
      195            200            205

His Pro Phe Gly Gly Gly Asn His Gln His Ile Gly Lys Pro Ser Thr
      210            215            220

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Ile Arg Arg Asp Val Pro Ala Gly Arg Lys Val Gly Leu Ile Ala Ala  
 225 230 235 240

Arg Arg Thr Gly Arg Leu Arg Gly Thr Lys Thr Val Gln Glu Lys Glu  
 245 250 255

Asn

<210> 200

<211> 214

<212> PRT

<213> Homo sapiens

<400> 200

His Glu Glu Asp Ile Ile His Asp Pro Gly Arg Gly Ala Pro Leu Ala  
 1 5 10 15

Lys Val Val Phe Arg Asp Pro Tyr Arg Phe Lys Lys Arg Thr Glu Leu  
 20 25 30

Phe Ile Ala Ala Glu Gly Ile His Thr Gly Gln Phe Val Tyr Cys Gly  
 35 40 45

Lys Lys Ala Gln Leu Asn Ile Gly Asn Val Leu Pro Val Gly Thr Met  
 50 55 60

Pro Glu Gly Thr Ile Val Cys Cys Leu Glu Glu Lys Pro Gly Asp Arg  
 65 70 75 80

Gly Lys Leu Ala Arg Ala Ser Gly Asn Tyr Ala Thr Val Ile Ser His  
 85 90 95

Asn Pro Glu Thr Lys Lys Thr Arg Val Lys Leu Pro Ser Gly Ser Lys  
 100 105 110

Lys Val Ile Ser Ser Ala Asn Arg Ala Val Val Gly Val Val Ala Gly  
 115 120 125

Gly Gly Arg Ile Asp Lys Pro Ile Leu Lys Ala Gly Arg Ala Tyr His  
 130 135 140

Lys Tyr Lys Ala Lys Arg Asn Cys Trp Pro Arg Val Arg Gly Val Ala  
 145 150 155 160

Met Asn Pro Val Glu His Pro Phe Gly Gly Gly Asn His Gln His Ile  
 165 170 175

Gly Lys Pro Ser Thr Ile Arg Arg Asp Ala Pro Ala Gly Arg Lys Val  
180 185 190

Gly Leu Ile Ala Ala Arg Arg Thr Gly Arg Leu Arg Gly Thr Lys Thr  
195 200 205

Val Gln Glu Lys Glu Asn  
210

<210> 201

<211> 190

<212> PRT

<213> Homo sapiens

<400> 201

Gly Ser Val Phe Arg Ala His Val Lys His Arg Lys Gly Ala Ala Arg  
1 5 10 15

Leu Arg Ala Val Asp Phe Ala Glu Arg His Gly Tyr Ile Lys Gly Ile  
20 25 30

Val Lys Ala Gln Leu Asn Ile Gly Asn Val Leu Pro Val Gly Thr Met  
35 40 45

Pro Glu Gly Thr Ile Val Cys Cys Leu Glu Glu Lys Pro Gly Asp Arg  
50 55 60

Gly Lys Leu Ala Arg Ala Ser Gly Asn Tyr Ala Thr Val Ile Ser His  
65 70 75 80

Asn Pro Glu Thr Lys Lys Thr Arg Val Lys Leu Pro Ser Gly Ser Lys  
85 90 95

Lys Val Ile Ser Ser Ala Asn Arg Ala Val Val Gly Val Val Ala Gly  
100 105 110

Gly Gly Arg Ile Asp Lys Pro Ile Leu Lys Ala Gly Arg Ala Tyr His  
115 120 125

Lys Tyr Lys Ala Lys Arg Asn Cys Trp Pro Arg Val Arg Gly Val Ala  
130 135 140

Met Asn Pro Val Glu His Pro Phe Gly Gly Gly Asn His Gln His Ile  
145 150 155 160

Gly Lys Pro Ser Thr Ile Arg Arg Asp Ala Pro Ala Gly Arg Lys Val

	165	170	175
Gly Leu Ile Ala Ala Arg Arg Thr Gly Arg Leu Arg Gly Thr			
	180	185	190
<210>	202		
<211>	229		
<212>	PRT		
<213>	Artificial Sequence		
<220>			
<223>	Description of Artificial Sequence:	Ribosomal	
	Proteins L2 domain sequence		
<400>	202		
Gly Arg Asn Asn Arg Gly His Ile Thr Arg Arg His Arg Gly Gly Gly			
1	5	10	15
His Lys Arg Leu Tyr Arg Ala Ile Asp Phe Lys Arg Arg Lys Gly Tyr			
	20	25	30
Ile Lys Gly Thr Val Lys Arg Ile Glu Tyr Asp Pro Asn Arg Ser Ala			
	35	40	45
Pro Ile Ala Leu Val Val Tyr Ser Asp Pro Gly Glu Lys Arg Tyr Ile			
	50	55	60
Leu Ala Pro Glu Gly Leu His Val Gly Asp Thr Ile Tyr Ser Gly Lys			
	65	70	75
			80
Asn Ala Thr Ile Lys Ile Gly Asn Val Leu Pro Leu Gly Glu Ile Pro			
	85	90	95
Glu Gly Thr Ile Ile His Asn Val Glu Glu Lys Pro Gly Asp Gly Gly			
	100	105	110
Gln Leu Ala Arg Ala Ala Gly Thr Tyr Ala Gln Ile Leu Ala His Asp			
	115	120	125
Gly Asp Lys Lys Thr Arg Val Lys Leu Pro Ser Gly Glu Lys Arg Arg			
	130	135	140
Val Ser Ser Glu Cys Arg Ala Thr Ile Gly Val Val Ala Asn Gly Gly			
	145	150	155
			160
Arg Ile Asp Lys Pro Leu Gly Lys Ala Gly Arg Ala Arg Trp Leu Gly			
	165	170	175

Lys Arg Pro Arg Val Arg Gly Val Ala Met Asn Pro Val Asp His Pro  
180 185 190

His Gly Gly Gly Glu Gly Arg His Pro Ile Gly Arg Lys Ser Pro Val  
195 200 205

Thr Pro Trp Gly Lys Lys Ala Leu Gly Ile Ala Thr Arg Arg Thr Lys  
210 215 220

Arg Leu Ser Asp Lys  
225

<210> 203

<211> 519

<212> PRT

<213> Homo sapiens

<400> 203

Met Ser Val Ser Val Leu Ser Pro Ser Arg Leu Leu Gly Asp Val Ser  
1 5 10 15

Gly Ile Leu Gln Ala Ala Ser Leu Leu Ile Leu Leu Leu Leu Ile  
20 25 30

Lys Ala Val Gln Leu Tyr Leu His Arg Gln Trp Leu Leu Lys Ala Leu  
35 40 45

Gln Gln Phe Pro Cys Pro Pro Ser His Trp Leu Phe Gly His Ile Gln  
50 55 60

Glu Leu Gln Gln Asp Gln Glu Leu Gln Arg Ile Gln Lys Trp Val Glu  
65 70 75 80

Thr Phe Pro Ser Ala Cys Pro His Trp Leu Trp Gly Gly Lys Val Arg  
85 90 95

Val Gln Leu Tyr Asp Pro Asp Tyr Met Lys Val Ile Leu Gly Arg Ser  
100 105 110

Asp Pro Lys Ser His Gly Ser Tyr Arg Phe Leu Ala Pro Trp Ile Gly  
115 120 125

Tyr Gly Leu Leu Leu Leu Asn Gly Gln Thr Trp Phe Gln His Arg Arg  
130 135 140

Met Leu Thr Pro Ala Phe His Tyr Asp Ile Leu Lys Pro Tyr Val Gly

145		150		155		160
Leu Met Ala Asp Ser Val Arg Val Met Leu Asp Lys Trp Glu Glu Leu						
	165		170		175	
Leu Gly Gln Asp Ser Pro Leu Glu Val Phe Gln His Val Ser Leu Met						
	180		185		190	
Thr Leu Asp Thr Ile Met Lys Cys Ala Phe Ser His Gln Gly Ser Ile						
	195		200		205	
Gln Val Asp Arg Asn Ser Gln Ser Tyr Ile Gln Ala Ile Ser Asp Leu						
	210		215		220	
Asn Asn Leu Val Phe Ser Arg Val Arg Asn Ala Phe His Gln Asn Asp						
225		230		235		240
Thr Ile Tyr Ser Leu Thr Ser Ala Gly Arg Trp Thr His Arg Ala Cys						
	245		250		255	
Gln Leu Ala His Gln His Thr Asp Gln Val Ile Gln Leu Arg Lys Ala						
	260		265		270	
Gln Leu Gln Lys Glu Gly Glu Leu Glu Lys Ile Lys Arg Lys Arg His						
	275		280		285	
Leu Asp Phe Leu Asp Ile Leu Leu Leu Ala Lys Met Glu Asn Gly Ser						
	290		295		300	
Ile Leu Ser Asp Lys Asp Leu Arg Ala Glu Val Asp Thr Phe Met Phe						
305		310		315		320
Glu Gly His Asp Thr Thr Ala Ser Gly Ile Ser Trp Ile Leu Tyr Ala						
	325		330		335	
Leu Ala Thr His Pro Lys His Gln Glu Arg Cys Arg Glu Glu Ile His						
	340		345		350	
Ser Leu Leu Gly Asp Gly Ala Ser Ile Thr Trp Asn His Leu Asp Gln						
	355		360		365	
Met Pro Tyr Thr Thr Met Cys Ile Lys Glu Ala Leu Arg Leu Tyr Pro						
	370		375		380	
Pro Val Pro Gly Ile Gly Arg Glu Leu Ser Thr Pro Val Thr Phe Pro						
385		390		395		400
Asp Gly Arg Ser Leu Pro Lys Gly Ile Met Val Leu Leu Ser Ile Tyr						



Ile Val Tyr Asp Pro Asp Tyr Met Lys Val Ile Leu Gly Arg Ser Asp  
 100 105 110  
 Pro Lys Ala Asn Gly Val Tyr Arg Leu Leu Ala Pro Trp Ile Gly Tyr  
 115 120 125  
 Gly Leu Leu Leu Leu Asn Gly Gln Pro Trp Phe Gln His Arg Arg Met  
 130 135 140  
 Leu Thr Pro Ala Phe His Tyr Asp Ile Leu Lys Pro Tyr Val Lys Asn  
 145 150 155 160  
 Met Ala Asp Ser Ile Arg Leu Met Leu Asp Lys Trp Glu Gln Leu Ala  
 165 170 175  
 Gly Gln Asp Ser Ser Ile Glu Ile Phe Gln His Ile Ser Leu Met Thr  
 180 185 190  
 Leu Asp Thr Val Met Lys Cys Ala Phe Ser His Asn Gly Ser Val Gln  
 195 200 205  
 Val Asp Gly Asn Tyr Lys Ser Tyr Ile Gln Ala Ile Gly Asn Leu Asn  
 210 215 220  
 Asp Leu Phe His Ser Arg Val Arg Asn Ile Phe His Gln Asn Asp Thr  
 225 230 235 240  
 Ile Tyr Asn Phe Ser Ser Asn Gly His Leu Phe Asn Arg Ala Cys Gln  
 245 250 255  
 Leu Ala His Asp His Thr Asp Gly Val Ile Lys Leu Arg Lys Asp Gln  
 260 265 270  
 Leu Gln Asn Ala Gly Glu Leu Glu Lys Val Lys Lys Lys Arg Arg Leu  
 275 280 285  
 Asp Phe Leu Asp Ile Leu Leu Leu Ala Arg Met Glu Asn Gly Asp Ser  
 290 295 300  
 Leu Ser Asp Lys Asp Leu Arg Ala Glu Val Asp Thr Phe Met Phe Glu  
 305 310 315 320  
 Gly His Asp Thr Thr Ala Ser Gly Val Ser Trp Ile Phe Tyr Ala Leu  
 325 330 335  
 Ala Thr His Pro Glu His Gln Gln Arg Cys Arg Glu Glu Val Gln Ser  
 340 345 350

Val Leu Gly Asp Gly Ser Ser Ile Thr Trp Asp His Leu Asp Gln Ile  
 355 360 365  
 Pro Tyr Thr Thr Met Cys Ile Lys Glu Ala Leu Arg Leu Tyr Pro Pro  
 370 375 380  
 Val Pro Gly Ile Val Arg Glu Leu Ser Thr Ser Val Thr Phe Pro Asp  
 385 390 395 400  
 Gly Arg Ser Leu Pro Lys Gly Ile Gln Val Thr Leu Ser Ile Tyr Gly  
 405 410 415  
 Leu His His Asn Pro Lys Val Trp Pro Asn Pro Glu Val Phe Asp Pro  
 420 425 430  
 Ser Arg Phe Ala Pro Asp Ser Pro Arg His Ser His Ser Phe Leu Pro  
 435 440 445  
 Phe Ser Gly Gly Ala Arg Asn Cys Ile Gly Lys Gln Phe Ala Met Ser  
 450 455 460  
 Glu Met Lys Val Ile Val Ala Leu Thr Leu Leu Arg Phe Glu Leu Leu  
 465 470 475 480  
 Pro Asp Pro Thr Lys Val Pro Ile Pro Leu Pro Arg Leu Val Leu Lys  
 485 490 495  
 Ser Lys Asn Gly Ile Tyr Leu Tyr Leu Lys Lys Leu His  
 500 505  
  
 <210> 205  
 <211> 509  
 <212> PRT  
 <213> Mus musculus  
  
 <400> 205  
 Met Ser Val Ser Ala Leu Ser Pro Thr Arg Phe Ala Asp Ser Leu Ser  
 1 5 10 15  
 Gly Phe Leu Gln Val Ala Ser Val Leu Gly Leu Leu Leu Leu Val  
 20 25 30  
 Lys Ala Val Gln Phe Tyr Leu His Arg Gln Trp Leu Leu Lys Ala Phe  
 35 40 45  
 Gln Gln Phe Pro Ser Pro Pro Phe His Trp Phe Phe Gly His Glu Lys  
 50 55 60



Phe Lys Gly Asp Gln Glu Leu Gln Glu Ile Val Ser Cys Ile Glu Asn  
 65 70 75 80

Phe Pro Ser Ala Phe Pro Arg Trp Phe Trp Gly Ser Lys Ala Tyr Leu  
 85 90 95

Thr Val Tyr Asp Pro Asp Tyr Met Lys Val Ile Leu Gly Arg Ser Asp  
 100 105 110

Pro Lys Ala Asn Gly Ala Tyr Arg Leu Leu Ala Pro Trp Ile Gly Tyr  
 115 120 125

Gly Leu Leu Leu Leu Asn Gly Gln Pro Trp Phe Gln His Arg Arg Met  
 130 135 140

Leu Thr Pro Ala Phe His Tyr Asp Ile Leu Lys Pro Tyr Val Lys Asn  
 145 150 155 160

Met Ala Asp Ser Ile Arg Leu Met Leu Asp Lys Trp Glu Arg Leu Ala  
 165 170 175

Asp Gln Asp Ser Ser Ile Glu Ile Phe Gln His Ile Ser Leu Met Thr  
 180 185 190

Leu Asp Thr Val Met Lys Cys Ala Phe Ser His Lys Gly Ser Val Gln  
 195 200 205

Val Asp Gly Asn Tyr Arg Thr Tyr Leu Gln Ala Ile Gly Asp Leu Asn  
 210 215 220

Asn Leu Phe His Ser Arg Val Arg Asn Ile Phe His Gln Asn Asp Thr  
 225 230 235 240

Ile Tyr Lys Leu Ser Ser Asn Gly Arg Leu Ala Lys Gln Ala Cys Gln  
 245 250 255

Leu Ala His Asp His Thr Asp Gly Val Ile Lys Leu Arg Lys Asp Gln  
 260 265 270

Leu Gln Asp Glu Gly Glu Leu Glu Lys Ile Lys Lys Lys Arg Arg Leu  
 275 280 285

Asp Phe Leu Asp Ile Leu Leu Phe Ala Arg Met Glu Asn Gly Asp Ser  
 290 295 300

Met Ser Asp Lys Asp Leu Arg Ala Glu Val Asp Thr Phe Met Phe Glu  
 305 310 315 320

Gly His Asp Thr Thr Ala Ser Gly Val Ser Trp Ile Phe Tyr Ala Leu  
 325 330 335  
 Ala Thr His Pro Asp His Gln Gln Arg Cys Arg Glu Glu Val Gln Ser  
 340 345 350  
 Leu Leu Gly Asp Gly Ser Ser Ile Thr Trp Asp His Leu Asp Gln Ile  
 355 360 365  
 Pro Tyr Thr Thr Met Cys Ile Lys Glu Ala Leu Arg Leu Tyr Pro Pro  
 370 375 380  
 Val Pro Gly Ile Val Arg Glu Leu Ser Thr Ser Val Thr Phe Pro Asp  
 385 390 395 400  
 Gly Arg Ser Leu Pro Lys Gly Val Gln Val Thr Leu Ser Ile Tyr Gly  
 405 410 415  
 Leu His His Asn Pro Lys Val Trp Pro Asn Pro Glu Val Phe Asp Pro  
 420 425 430  
 Ser Arg Phe Ala Pro Asp Ser Pro Arg His Ser His Ser Phe Leu Pro  
 435 440 445  
 Phe Ser Gly Gly Ala Arg Asn Cys Ile Gly Lys Gln Phe Ala Met Ser  
 450 455 460  
 Glu Leu Lys Val Ile Val Ala Leu Thr Leu Leu Arg Phe Glu Leu Leu  
 465 470 475 480  
 Pro Asp Pro Thr Arg Val Pro Met Pro Leu Ala Arg Leu Val Leu Lys  
 485 490 495  
 Ser Lys Asn Gly Ile Tyr Leu His Leu Lys Lys Leu His  
 500 505

<210> 206

<211> 509

<212> PRT

<213> Mus musculus

<400> 206

Met Ser Val Ser Ala Leu Ser Pro Thr Arg Phe Ala Asp Ser Leu Ser  
 1 5 10 15

Gly Phe Leu Gln Val Ala Ser Val Leu Gly Leu Leu Leu Leu Val

20	25	30
Lys Ala Val Gln Phe Tyr Leu His Arg Gln Trp Leu Leu Lys Ala Phe		
35	40	45
Gln Gln Phe Pro Ser Pro Pro Phe His Trp Phe Phe Gly His Glu Gln		
50	55	60
Phe Lys Gly Asp His Glu Leu Gln Glu Ile Val Ser Cys Ile Glu Asn		
65	70	75
		80
Phe Pro Ser Ala Phe Pro Arg Trp Phe Trp Gly Ser Lys Ala Tyr Leu		
	85	90
		95
Thr Val Tyr Asp Pro Asp Tyr Met Lys Val Ile Leu Gly Arg Ser Asp		
100	105	110
Pro Lys Ala Asn Gly Ala Tyr Arg Leu Leu Ala Pro Trp Ile Gly Tyr		
115	120	125
Gly Leu Leu Leu Leu Asn Gly Gln Pro Trp Phe Gln His Arg Arg Met		
130	135	140
Leu Thr Pro Ala Phe His Tyr Asp Ile Leu Lys Pro Tyr Val Lys Asn		
145	150	155
		160
Met Ala Asp Ser Ile Arg Leu Met Leu Asp Lys Trp Glu Arg Leu Ala		
	165	170
		175
Asp Gln Asp Ser Ser Ile Glu Ile Phe Gln His Ile Ser Leu Met Thr		
180	185	190
Leu Asp Thr Val Met Lys Cys Ala Phe Ser His Lys Gly Ser Val Gln		
195	200	205
Val Asp Gly Asn Tyr Arg Thr Tyr Leu Gln Ala Ile Gly Asp Leu Asn		
210	215	220
Asn Leu Phe His Ser Arg Val Arg Asn Ile Phe His Gln Asn Asp Thr		
225	230	235
		240
Ile Tyr Lys Leu Ser Ser Asn Gly Arg Leu Ala Lys Gln Ala Cys Gln		
245	250	255
Leu Ala His Asp His Thr Asp Gly Val Ile Lys Leu Arg Lys Asp Gln		
260	265	270
Leu Gln Asp Glu Gly Glu Leu Glu Lys Ile Lys Lys Lys Arg Arg Leu		

275		280		285
Asp Phe Leu Asp Ile Leu Leu Phe Ala Arg Met Glu Asn Gly Asp Ser				
290		295		300
Met Ser Asp Lys Asp Leu Arg Ala Glu Val Asp Thr Phe Met Phe Glu				
305		310		315
				320
Gly His Asp Thr Thr Ala Ser Gly Val Ser Trp Ile Phe Tyr Ala Leu				
		325		330
				335
Ala Thr His Pro Asp His Gln Gln Arg Cys Arg Glu Glu Val Gln Ser				
		340		345
				350
Leu Leu Gly Asp Gly Ser Ser Ile Thr Trp Asp His Leu Asp Gln Ile				
		355		360
				365
Pro Tyr Thr Thr Met Cys Ile Lys Glu Ala Leu Arg Leu Tyr Pro Pro				
		370		375
				380
Val Pro Gly Ile Val Arg Glu Leu Ser Thr Ser Val Thr Phe Pro Asp				
		385		390
				395
				400
Gly Arg Ser Leu Pro Lys Gly Val Gln Val Thr Leu Ser Ile Tyr Gly				
		405		410
				415
Leu His His Asn Pro Lys Val Trp Pro Asn Pro Glu Val Phe Asp Pro				
		420		425
				430
Ser Arg Phe Ala Pro Asp Ser Pro Arg His Ser His Ser Phe Leu Pro				
		435		440
				445
Phe Ser Gly Gly Ala Arg Asn Cys Ile Gly Lys Gln Phe Ala Met Ser				
		450		455
				460
Glu Leu Lys Val Ile Val Ala Leu Thr Leu Leu Arg Phe Glu Leu Leu				
		465		470
				475
				480
Pro Asp Pro Thr Arg Val Pro Met Pro Leu Ala Arg Leu Val Leu Lys				
		485		490
				495
Ser Lys Asn Gly Ile Tyr Leu His Leu Lys Lys Leu His				
		500		505

<210> 207  
 <211> 519  
 <212> PRT

<213> Homo sapiens

<400> 207

Met	Ser	Val	Ser	Val	Leu	Ser	Pro	Ser	Arg	Leu	Leu	Gly	Asp	Val	Ser
1				5					10					15	
Gly	Ile	Leu	Gln	Ala	Ala	Ser	Leu	Leu	Ile	Leu	Leu	Leu	Leu	Leu	Ile
			20					25					30		
Lys	Ala	Val	Gln	Leu	Tyr	Leu	His	Arg	Gln	Trp	Leu	Leu	Lys	Ala	Leu
		35					40					45			
Gln	Gln	Phe	Pro	Cys	Pro	Pro	Ser	His	Trp	Leu	Phe	Gly	His	Ile	Gln
	50						55				60				
Glu	Leu	Gln	Gln	Asp	Gln	Glu	Leu	Gln	Arg	Ile	Gln	Lys	Trp	Val	Glu
65					70					75					80
Thr	Phe	Pro	Ser	Ala	Cys	Pro	His	Trp	Leu	Trp	Gly	Gly	Lys	Val	Arg
				85					90					95	
Val	Gln	Leu	Tyr	Asp	Pro	Asp	Tyr	Met	Lys	Val	Ile	Leu	Gly	Arg	Ser
			100					105					110		
Asp	Pro	Lys	Ser	His	Gly	Ser	Tyr	Arg	Phe	Leu	Ala	Pro	Trp	Ile	Gly
		115					120					125			
Tyr	Gly	Leu	Leu	Leu	Leu	Asn	Gly	Gln	Thr	Trp	Phe	Gln	His	Arg	Arg
	130					135					140				
Met	Leu	Thr	Pro	Ala	Phe	His	Tyr	Asp	Ile	Leu	Lys	Pro	Tyr	Val	Gly
145					150					155					160
Leu	Met	Ala	Asp	Ser	Val	Arg	Val	Met	Leu	Asp	Lys	Trp	Glu	Glu	Leu
				165					170					175	
Leu	Gly	Gln	Asp	Ser	Pro	Leu	Glu	Val	Phe	Gln	His	Val	Ser	Leu	Met
		180						185					190		
Thr	Leu	Asp	Thr	Ile	Met	Lys	Cys	Ala	Phe	Ser	His	Gln	Gly	Ser	Ile
		195					200					205			
Gln	Val	Asp	Arg	Asn	Ser	Gln	Ser	Tyr	Ile	Gln	Ala	Ile	Ser	Asp	Leu
	210					215					220				
Asn	Asn	Leu	Val	Phe	Ser	Arg	Val	Arg	Asn	Ala	Phe	His	Gln	Asn	Asp
225					230					235					240

Thr	Ile	Tyr	Ser	Leu	Thr	Ser	Ala	Gly	Arg	Trp	Thr	His	Arg	Ala	Cys	245	250	255	
Gln	Leu	Ala	His	Gln	His	Thr	Asp	Gln	Val	Ile	Gln	Leu	Arg	Lys	Ala	260	265	270	
Gln	Leu	Gln	Lys	Glu	Gly	Glu	Leu	Glu	Lys	Ile	Lys	Arg	Lys	Arg	His	275	280	285	
Leu	Asp	Phe	Leu	Asp	Ile	Leu	Leu	Leu	Ala	Lys	Met	Glu	Asn	Gly	Ser	290	295	300	
Ile	Leu	Ser	Asp	Lys	Asp	Leu	Arg	Ala	Glu	Val	Asp	Thr	Phe	Met	Phe	305	310	315	320
Glu	Gly	His	Asp	Thr	Thr	Ala	Ser	Gly	Ile	Ser	Trp	Ile	Leu	Tyr	Ala	325	330	335	
Leu	Ala	Thr	His	Pro	Lys	His	Gln	Glu	Arg	Cys	Arg	Glu	Glu	Ile	His	340	345	350	
Ser	Leu	Leu	Gly	Asp	Gly	Ala	Ser	Ile	Thr	Trp	Asn	His	Leu	Asp	Gln	355	360	365	
Met	Pro	Tyr	Thr	Thr	Met	Cys	Ile	Lys	Glu	Ala	Leu	Arg	Leu	Tyr	Pro	370	375	380	
Pro	Val	Pro	Gly	Ile	Gly	Arg	Glu	Leu	Ser	Thr	Pro	Val	Thr	Phe	Pro	385	390	395	400
Asp	Gly	Arg	Ser	Leu	Pro	Lys	Gly	Ile	Met	Val	Leu	Leu	Ser	Ile	Tyr	405	410	415	
Gly	Leu	His	His	Asn	Pro	Lys	Val	Trp	Pro	Asn	Pro	Glu	Val	Phe	Asp	420	425	430	
Pro	Ser	Arg	Phe	Ala	Pro	Gly	Ser	Ala	Gln	His	Ser	His	Ala	Phe	Leu	435	440	445	
Pro	Phe	Ser	Gly	Gly	Ser	Arg	Asn	Cys	Ile	Gly	Lys	Gln	Phe	Ala	Met	450	455	460	
Asn	Glu	Leu	Lys	Val	Ala	Thr	Ala	Leu	Thr	Leu	Leu	Arg	Phe	Glu	Leu	465	470	475	480
Leu	Pro	Asp	Pro	Thr	Arg	Ile	Pro	Ile	Pro	Ile	Ala	Arg	Leu	Val	Leu	485	490	495	

Lys Ser Lys Asn Gly Ile His Leu Arg Leu Arg Arg Leu Pro Asn Pro  
500 505 510

Cys Glu Asp Lys Asp Gln Leu  
515

<210> 208

<211> 434

<212> PRT

<213> Homo sapiens

<400> 208

Pro Ala Pro Pro Thr His Trp Phe Leu Gly His Lys Leu Met Glu Lys  
1 5 10 15

Tyr Pro Cys Ala Val Pro Leu Trp Val Gly Pro Phe Thr Met Phe Phe  
20 25 30

Ser Val His Asp Pro Asp Tyr Ala Lys Ile Leu Leu Lys Arg Gln Gly  
35 40 45

Lys Asn Gln Glu Gly Phe Leu Pro Phe Ile Ser Gln Gly Lys Gly Leu  
50 55 60

Ala Ala Leu Asp Gly Pro Lys Trp Phe Gln His Arg Arg Leu Leu Thr  
65 70 75 80

Pro Gly Phe His Phe Asn Ile Leu Lys Ala Tyr Ile Glu Val Met Ala  
85 90 95

His Ser Val Lys Met Met Leu Asn Lys Trp Glu Glu His Ile Ala Gln  
100 105 110

Asn Ser Arg Leu Glu Leu Phe Gln His Val Ser Leu Met Thr Leu Asp  
115 120 125

Ser Ile Met Lys Cys Ala Phe Ser His Gln Gly Ser Ile Gln Leu Asp  
130 135 140

Arg Ser Ser Tyr Leu Lys Ala Val Phe Asn Leu Ser Lys Ile Ser Asn  
145 150 155 160

Gln Arg Met Asn Asn Phe Leu His His Asn Asp Leu Val Phe Lys Phe  
165 170 175

Ser Ser Gln Gly Gln Ile Phe Ser Lys Phe Asn Gln Glu Leu His Gln  
180 185 190

His Leu Glu Lys Val Ile Gln Asp Arg Lys Glu Ser Leu Lys Asp Lys  
 195 200 205  
 Leu Lys Gln Asp Thr Thr Gln Lys Arg Arg Trp Asp Phe Leu Asp Ile  
 210 215 220  
 Leu Leu Ser Ala Lys Val Glu Asn Thr Lys Asp Phe Ser Glu Ala Asp  
 225 230 235 240  
 Leu Gln Ala Glu Val Lys Thr Phe Met Phe Ala Gly His Asp Thr Thr  
 245 250 255  
 Ser Ser Ala Ile Ser Trp Ile Leu Tyr Cys Leu Ala Lys Tyr Pro Glu  
 260 265 270  
 His Gln Gln Arg Cys Arg Asp Glu Ile Arg Glu Leu Leu Gly Asp Gly  
 275 280 285  
 Ser Ser Ile Thr Trp His Leu Ser Gln Met Pro Tyr Thr Thr Met Cys  
 290 295 300  
 Ile Lys Glu Cys Leu Arg Leu Tyr Ala Pro Val Val Asn Ile Ser Arg  
 305 310 315 320  
 Leu Leu Asp Lys Pro Ile Thr Phe Pro Asp Gly Arg Ser Leu Pro Ala  
 325 330 335  
 Gly Ile Thr Val Val Leu Ser Ile Trp Gly Leu His His Asn Pro Ala  
 340 345 350  
 Val Trp Lys Asn Val Gln Val Phe Asp Pro Leu Arg Phe Ser Gln Glu  
 355 360 365  
 Asn Ser Asp Gln Arg His Pro Tyr Ala Tyr Leu Pro Phe Ser Ala Gly  
 370 375 380  
 Ser Arg Asn Cys Ile Gly Gln Glu Phe Ala Met Ile Glu Leu Lys Val  
 385 390 395 400  
 Thr Ile Ala Leu Ile Leu Leu His Phe Arg Val Thr Pro Asp Pro Thr  
 405 410 415  
 Arg Pro Leu Thr Phe Pro Asn His Phe Ile Leu Lys Pro Lys Asn Gly  
 420 425 430  
 Met Tyr



<210> 209  
<211> 440  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Cytochrome  
P450 domain sequence

<400> 209

Pro	Gly	Pro	Pro	Pro	Leu	Pro	Leu	Ile	Gly	Asn	Leu	Leu	Gln	Leu	Gly	
1				5					10					15		
Arg	Gly	Pro	Ile	His	Ser	Leu	Thr	Glu	Leu	Arg	Lys	Lys	Tyr	Gly	Pro	
			20					25						30		
Val	Phe	Thr	Leu	Tyr	Leu	Gly	Pro	Arg	Pro	Val	Val	Val	Val	Thr	Gly	
		35					40					45				
Pro	Glu	Ala	Val	Lys	Glu	Val	Leu	Ile	Asp	Lys	Gly	Glu	Glu	Phe	Ala	
	50					55					60					
Gly	Arg	Gly	Asp	Phe	Pro	Val	Phe	Pro	Trp	Leu	Gly	Tyr	Gly	Ile	Leu	
65					70					75					80	
Phe	Ser	Asn	Gly	Pro	Arg	Trp	Arg	Gln	Leu	Arg	Arg	Leu	Leu	Thr	Leu	
			85						90						95	
Arg	Phe	Phe	Gly	Met	Gly	Lys	Arg	Ser	Lys	Leu	Glu	Glu	Arg	Ile	Gln	
			100					105						110		
Glu	Glu	Ala	Arg	Asp	Leu	Val	Glu	Arg	Leu	Arg	Lys	Glu	Gln	Gly	Ser	
		115					120					125				
Pro	Ile	Asp	Ile	Thr	Glu	Leu	Leu	Ala	Pro	Ala	Pro	Leu	Asn	Val	Ile	
	130					135						140				
Cys	Ser	Leu	Leu	Phe	Gly	Val	Arg	Phe	Asp	Tyr	Glu	Asp	Pro	Glu	Phe	
145					150					155					160	
Leu	Lys	Leu	Ile	Asp	Lys	Leu	Asn	Glu	Leu	Phe	Phe	Leu	Val	Ser	Pro	
			165						170						175	
Trp	Gly	Gln	Leu	Leu	Asp	Phe	Phe	Arg	Tyr	Leu	Pro	Gly	Ser	His	Arg	
		180						185							190	

Lys Ala Phe Lys Ala Ala Lys Asp Leu Lys Asp Tyr Leu Asp Lys Leu  
 195 200 205  
 Ile Glu Glu Arg Arg Glu Thr Leu Glu Pro Gly Asp Pro Arg Asp Phe  
 210 215 220  
 Leu Asp Ser Leu Leu Ile Glu Ala Lys Arg Glu Gly Gly Ser Glu Leu  
 225 230 235 240  
 Thr Asp Glu Glu Leu Lys Ala Thr Val Leu Asp Leu Leu Phe Ala Gly  
 245 250 255  
 Thr Asp Thr Thr Ser Ser Thr Leu Ser Trp Ala Leu Tyr Leu Leu Ala  
 260 265 270  
 Lys His Pro Glu Val Gln Ala Lys Leu Arg Glu Glu Ile Asp Glu Val  
 275 280 285  
 Ile Gly Arg Asp Arg Ser Pro Thr Tyr Asp Asp Arg Ala Asn Met Pro  
 290 295 300  
 Tyr Leu Asp Ala Val Ile Lys Glu Thr Leu Arg Leu His Pro Val Val  
 305 310 315 320  
 Pro Leu Leu Leu Pro Arg Val Ala Thr Glu Asp Thr Glu Ile Asp Gly  
 325 330 335  
 Tyr Leu Ile Pro Lys Gly Thr Leu Val Ile Val Asn Leu Tyr Ser Leu  
 340 345 350  
 His Arg Asp Pro Lys Val Phe Pro Asn Pro Glu Glu Phe Asp Pro Glu  
 355 360 365  
 Arg Phe Leu Asp Glu Asn Gly Lys Phe Lys Lys Ser Tyr Ala Phe Leu  
 370 375 380  
 Pro Phe Gly Ala Gly Pro Arg Asn Cys Leu Gly Glu Arg Leu Ala Arg  
 385 390 395 400  
 Met Glu Leu Phe Leu Phe Leu Ala Thr Leu Leu Gln Arg Phe Glu Leu  
 405 410 415  
 Glu Leu Val Pro Pro Gly Asp Ile Pro Leu Thr Pro Lys Pro Leu Gly  
 420 425 430  
 Leu Pro Ser Lys Pro Pro Leu Tyr  
 435 440

<210> 210  
 <211> 153  
 <212> PRT  
 <213> Mus musculus

<400> 210  
 Met Gly Ser Thr Met Glu Pro Pro Gly Gly Ala Tyr Leu His Leu Gly  
 1 5 10 15  
 Ala Val Thr Ser Pro Val Gly Thr Ala Arg Met Leu Gln Leu Ala Phe  
 20 25 30  
 Gly Cys Thr Thr Phe Ser Leu Val Ala His Arg Gly Gly Phe Gly Gly  
 35 40 45  
 Val Gln Gly Thr Phe Cys Met Ala Ala Trp Gly Phe Cys Phe Ala Phe  
 50 55 60  
 Ser Val Leu Val Val Ala Cys Glu Phe Thr Lys Leu His Ser Cys Leu  
 65 70 75 80  
 Arg Leu Ser Trp Gly Asn Phe Thr Ala Ala Phe Ala Met Leu Ala Thr  
 85 90 95  
 Leu Leu Cys Ala Thr Ala Ala Val Ile Tyr Pro Leu Tyr Phe Thr Arg  
 100 105 110  
 Leu Glu Cys Pro Pro Glu Pro Ala Gly Cys Met Val Ala Pro Cys Gln  
 115 120 125  
 Arg Pro Ala Pro Glu Ser Pro Trp Lys Asp Asp Asp Val Met Thr Ala  
 130 135 140  
 Met Glu Tyr Leu Ser Arg His Pro Thr  
 145 150

<210> 211  
 <211> 322  
 <212> PRT  
 <213> Homo sapiens

<400> 211  
 Met Pro Val Thr Val Thr Arg Thr Thr Ile Thr Thr Thr Thr Ser  
 1 5 10 15  
 Ser Ser Gly Leu Gly Ser Pro Met Ile Val Gly Ser Pro Arg Ala Leu

20	25	30
Thr Gln Pro Leu Gly Leu Leu Arg Leu Leu Gln Leu Val Ser Thr Cys		
35	40	45
Val Ala Phe Ser Leu Val Ala Ser Val Gly Ala Trp Thr Gly Ser Met		
50	55	60
Gly Asn Trp Ser Met Phe Thr Trp Cys Phe Cys Phe Ser Val Thr Leu		
65	70	75
		80
Ile Ile Leu Ile Val Glu Leu Cys Gly Leu Gln Ala Arg Phe Pro Leu		
	85	90
		95
Ser Trp Arg Asn Phe Pro Ile Thr Phe Ala Cys Tyr Ala Ala Leu Phe		
100	105	110
Cys Leu Ser Ala Ser Ile Ile Tyr Pro Thr Thr Tyr Val Gln Phe Leu		
115	120	125
Ser His Gly Arg Ser Arg Asp His Ala Ile Ala Ala Thr Phe Phe Ser		
130	135	140
Cys Ile Ala Cys Val Ala Tyr Ala Thr Glu Val Ala Trp Thr Arg Ala		
145	150	155
		160
Arg Pro Gly Glu Ile Thr Gly Tyr Met Ala Thr Val Pro Gly Leu Leu		
	165	170
		175
Lys Val Leu Glu Thr Phe Val Ala Cys Ile Ile Phe Ala Phe Ile Ser		
180	185	190
Asp Pro Asn Leu Tyr Gln His Gln Pro Ala Leu Glu Trp Cys Val Ala		
195	200	205
Val Tyr Ala Ile Cys Phe Ile Leu Ala Ala Ile Ala Ile Leu Leu Asn		
210	215	220
Leu Gly Glu Cys Thr Asn Val Leu Pro Ile Pro Phe Pro Ser Phe Leu		
225	230	235
		240
Ser Gly Leu Ala Leu Leu Ser Val Leu Leu Tyr Ala Thr Ala Leu Val		
245	250	255
Leu Trp Pro Leu Tyr Gln Phe Asp Glu Lys Tyr Gly Gly Gln Pro Arg		
260	265	270
Arg Ser Arg Asp Val Ser Cys Ser Arg Ser His Ala Tyr Tyr Val Cys		

275                                      280                                      285  
 Ala Trp Asp Arg Arg Leu Ala Val Ala Ile Leu Thr Ala Ile Asn Leu  
 290                                      295                                      300  
 Leu Ala Tyr Val Ala Asp Leu Val His Ser Ala His Leu Val Phe Val  
 305                                      310                                      315                                      320  
 Lys Val  
  
 <210> 212  
 <211> 296  
 <212> PRT  
 <213> Mus musculus  
  
 <400> 212  
 Met Pro Val Thr Val Thr Arg Thr Thr Ile Thr Thr Thr Thr Ser Ser  
 1                                      5                                      10                                      15  
 Ser Thr Thr Val Gly Ser Ala Arg Ala Leu Thr Gln Pro Leu Gly Leu  
 20                                      25                                      30  
 Leu Arg Leu Leu Gln Leu Ile Ser Thr Cys Val Ala Phe Ser Leu Val  
 35                                      40                                      45  
 Ala Ser Val Gly Ala Trp Thr Gly Pro Met Gly Asn Trp Ala Met Phe  
 50                                      55                                      60  
 Thr Trp Cys Phe Cys Phe Ala Val Thr Leu Ile Ile Leu Ile Val Glu  
 65                                      70                                      75                                      80  
 Leu Gly Gly Leu Gln Ala His Phe Pro Leu Ser Trp Arg Asn Phe Pro  
 85                                      90                                      95  
 Ile Thr Phe Ala Cys Tyr Ala Ala Leu Phe Cys Leu Ser Ser Ser Ile  
 100                                      105                                      110  
 Ile Tyr Pro Thr Thr Tyr Val Gln Phe Leu Ala His Gly Arg Thr Arg  
 115                                      120                                      125  
 Asp His Ala Ile Ala Ala Thr Thr Phe Ser Cys Val Ala Cys Leu Ala  
 130                                      135                                      140  
 Tyr Ala Thr Glu Val Ala Trp Thr Arg Ala Arg Pro Gly Glu Ile Thr  
 145                                      150                                      155                                      160

Gly Tyr Met Ala Thr Val Pro Gly Leu Leu Lys Val Phe Glu Thr Phe  
                     165                    170                    175  
 Val Ala Cys Ile Ile Phe Ala Phe Ile Gly Glu Pro Leu Leu Tyr Asn  
                     180                    185                    190  
 Gln Lys Pro Ala Leu Glu Trp Cys Val Ala Val Tyr Ala Ile Cys Phe  
                     195                    200                    205  
 Ile Leu Ala Gly Val Thr Ile Leu Leu Asn Leu Gly Asp Cys Thr Asn  
                     210                    215                    220  
 Val Leu Pro Ile Pro Phe Pro Thr Phe Leu Ser Gly Leu Ala Tyr Ser  
                     225                    230                    235                    240  
 Leu Phe Ser Phe Thr Pro Leu Pro Ser Ser Ser Gly Pro Ser Thr Asn  
                     245                    250                    255  
 Leu Ile Arg Asp Ile Arg Ala Asn Pro Ala Val Gln Trp Ile Gln Ala  
                     260                    265                    270  
 Ala Leu Val Val Leu Val Ile Tyr Asn Pro Thr Arg Cys Val Ser Gly  
                     275                    280                    285  
 Thr Asp Asp Trp Arg Cys Pro Ser  
                     290                    295  
  
 <210> 213  
 <211> 245  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 213  
 Met Thr Leu Val Ile Leu Leu Val Glu Leu Gly Gly Ser Gln Ala Arg  
   1                    5                    10                    15  
 Phe Pro Leu Phe Trp Arg Asn Phe Pro Ile Thr Phe Ala Cys Tyr Ala  
                     20                    25                    30  
 Ala Leu Leu Cys Leu Ser Ala Ser Ile Ile Tyr Pro Thr Thr Tyr Leu  
                     35                    40                    45  
 Gln Phe Leu Ser His Gly Arg Ser Arg Asp His Ala Ile Ala Ala Ile  
                     50                    55                    60  
 Val Phe Ser Gly Ile Ala Cys Val Ala Tyr Ala Thr Glu Val Thr Trp  
                     65                    70                    75                    80

Thr Arg Ala Arg Pro Gly Glu Ile Thr Asp Tyr Met Ala Ser Glu Leu  
                     85                    90                    95  
 Gly Leu Leu Lys Val Leu Glu Thr Phe Val Ala Cys Leu Ile Phe Val  
                     100                    105                    110  
 Phe Ile Asn Ser Pro Tyr Val Tyr His Asn Arg Pro Ala Leu Glu Trp  
                     115                    120                    125  
 Cys Val Ala Val Tyr Ala Leu Cys Phe Val Leu Ala Ala Leu Thr Val  
                     130                    135                    140  
 Leu Leu Ser Leu Gly His Cys Thr Asn Met Leu Pro Ile Arg Phe Pro  
 145                    150                    155                    160  
 Ser Phe Leu Leu Gly Leu Ala Leu Leu Ser Val Leu Leu Tyr Ala Thr  
                     165                    170                    175  
 Ala Leu Val Leu Trp Pro Leu Tyr Gln Phe Asn Glu Lys Tyr Gly Val  
                     180                    185                    190  
 Gln Pro Trp Gln Thr Arg Asp Val Ser Cys Ser Asp Arg Asn Pro Tyr  
                     195                    200                    205  
 Leu Val Cys Ile Trp Asp Arg Arg Leu Ala Val Thr Asn Leu Thr Ala  
                     210                    215                    220  
 Val Asn Leu Leu Ala Tyr Val Gly Asp Leu Val Tyr Ser Ala His Leu  
 225                    230                    235                    240  
 Val Phe Val Lys Val  
                     245

<210> 214

<211> 331

<212> PRT

<213> Homo sapiens

<400> 214

Met Ala Arg Gln Arg Glu Glu Lys Arg Arg Thr Glu Gln Gly Phe Gly  
   1                    5                    10                    15

Leu Lys Cys Ser Arg Leu Ile Ile Leu Pro Asn Ile Arg Ile Ile Tyr  
                     20                    25                    30

Lys Phe Arg Ile Tyr Thr Cys Thr Leu Ser Glu Asn Thr Glu Asn Leu

35	40	45
Ala Leu Cys Ser Ser Asn Asn Gln Thr Lys Leu Asn Gln Thr Met Gln		
50	55	60
Met Leu Lys Pro Asp Leu Phe Ser Val Ser Ser Ser Ala Arg Thr Ala		
65	70	75 80
Ala Met Pro Val Thr Val Thr His Pro Thr Val Thr Thr Thr Met Arg		
	85	90 95
Ser Pro Thr Val Val Gly Ser Ser Arg Ala Leu Ile Gln Pro Leu Gly		
	100	105 110
Leu Leu Arg Leu Leu Gln Leu Val Ser Thr Cys Val Ala Leu Ser Leu		
	115	120 125
Val Ala Ser Cys Phe Cys Phe Ala Met Thr Leu Val Ile Leu Leu Val		
	130	135 140
Glu Leu Gly Gly Ser Gln Ala Arg Phe Pro Leu Phe Trp Arg Asn Phe		
145	150	155 160
Pro Ile Thr Phe Ala Cys Tyr Ala Ala Leu Leu Cys Leu Ser Ala Ser		
	165	170 175
Ile Ile Tyr Pro Thr Thr Tyr Leu Gln Phe Leu Ser His Gly Arg Ser		
	180	185 190
Arg Asp His Ala Ile Ala Ala Ile Val Phe Ser Gly Ile Ala Cys Val		
	195	200 205
Ala Tyr Ala Thr Glu Val Thr Trp Thr Arg Ala Arg Pro Gly Glu Ile		
	210	215 220
Thr Asp Tyr Met Ala Ser Glu Leu Gly Leu Leu Lys Val Leu Glu Thr		
225	230	235 240
Phe Val Ala Cys Leu Ile Phe Val Phe Ile Asn Ser Pro Tyr Val Tyr		
	245	250 255
His Asn Arg Pro Ala Leu Glu Trp Trp Val Ala Val Tyr Ala Leu Cys		
	260	265 270
Phe Val Leu Ala Ala Leu Thr Ile Leu Leu Ser Leu Gly His Cys Thr		
	275	280 285
Asn Met Leu Pro Ile Arg Phe Pro Ser Phe Leu Leu Gly Leu Ala Leu		



290                                      295                                      300  
 Leu Ser Val Leu Leu Tyr Ala Thr Ala Leu Val Leu Trp Pro Leu Tyr  
 305                                      310                                      315                                      320  
 Gln Phe Asn Glu Asn Pro Gly Arg Arg Glu Met  
                                     325                                      330  
  
 <210> 215  
 <211> 365  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 215  
 Met Gly Tyr Cys Gln Gly Val Ser Gln Val Ala Val Val Leu Leu Met  
   1                                      5                                      10                                      15  
 Phe Pro Lys Glu Lys Glu Ala Phe Leu Ala Leu Ala Gln Leu Leu Thr  
                                     20                                      25                                      30  
 Ser Lys Asn Leu Pro Asp Thr Val Asp Gly Gln Leu Pro Met Gly Pro  
                                     35                                      40                                      45  
 His Ser Arg Ala Ser Gln Val Ala Pro Glu Thr Thr Ser Ser Lys Val  
                                     50                                      55                                      60  
 Asp Arg Gly Val Ser Thr Val Cys Gly Lys Pro Lys Val Val Gly Lys  
   65                                      70                                      75                                      80  
 Ile Tyr Gly Gly Arg Asp Ala Ala Ala Gly Gln Trp Pro Trp Gln Ala  
                                     85                                      90                                      95  
 Ser Leu Leu Tyr Trp Gly Ser His Leu Cys Gly Ala Val Leu Ile Asp  
                                     100                                      105                                      110  
 Ser Cys Trp Leu Val Ser Thr Thr His Cys Phe Leu Lys Thr Ser Ser  
                                     115                                      120                                      125  
 Ser Phe Ile Leu Ser Ser Gly Arg Glu Phe Pro Gly Pro Cys Val Cys  
                                     130                                      135                                      140  
 Leu Leu Asn Pro Asp Met Arg Glu Ser Ile Gly Ser Val Cys Ala Gly  
 145                                      150                                      155                                      160  
 His Leu Gln Gly Phe Ser Ser Val Cys Thr Met Leu Leu Lys Ser Gln  
                                     165                                      170                                      175

Ala Pro Lys Asn Tyr Gln Val Leu Leu Gly Asn Ile Gln Leu Tyr His  
 180 185 190  
 Gln Thr Gln His Thr Gln Lys Met Ser Val His Arg Ile Ile Thr His  
 195 200 205  
 Pro Asp Phe Glu Lys Leu His Pro Phe Gly Ser Asp Ile Ala Met Leu  
 210 215 220  
 Gln Leu His Leu Pro Met Asn Phe Thr Ser Tyr Ile Val Pro Val Cys  
 225 230 235 240  
 Leu Pro Ser Arg Asp Met Gln Leu Pro Met Gln Leu Ser Pro Pro Phe  
 245 250 255  
 Tyr Leu Gln Glu Gly Lys Gly Asp Ser Gly Gly Pro Leu Val Cys Tyr  
 260 265 270  
 Leu Pro Ser Ala Trp Val Leu Val Gly Leu Ala Ser Trp Gly Leu Asp  
 275 280 285  
 Cys Arg His Pro Ala Tyr Pro Ser Ile Phe Thr Arg Val Thr Tyr Phe  
 290 295 300  
 Ile Asn Trp Ile Asp Lys Ile Met Arg Leu Thr Pro Leu Ser Asp Pro  
 305 310 315 320  
 Ala Leu Ala Pro His Thr Cys Ser Pro Pro Lys Pro Leu Arg Ala Ala  
 325 330 335  
 Gly Leu Pro Gly Pro Cys Ala Ala Leu Val Leu Pro Gln Thr Trp Leu  
 340 345 350  
 Leu Leu Pro Leu Thr Leu Arg Ala Pro Trp Gln Thr Leu  
 355 360 365

<210> 216

<211> 148

<212> PRT

<213> Homo sapiens

<400> 216

Cys Gly Lys Pro Lys Val Val Gly Lys Ile Tyr Gly Gly Arg Asp Ala  
 1 5 10 15

Ala Ala Gly Gln Trp Pro Trp Gln Ala Ser Leu Leu Tyr Trp Gly Ser  
 20 25 30

His Leu Cys Gly Ala Val Leu Ile Asp Ser Cys Trp Leu Val Ser Thr  
 35 40 45  
 Thr His Cys Phe Leu Asn Lys Ser Gln Ala Pro Lys Asn Tyr Gln Val  
 50 55 60  
 Leu Leu Gly Asn Ile Gln Leu Tyr His Gln Thr Gln His Thr Gln Lys  
 65 70 75 80  
 Met Ser Val His Arg Ile Ile Thr His Pro Asp Phe Glu Lys Leu His  
 85 90 95  
 Pro Phe Gly Ser Asp Ile Ala Met Leu Gln Leu His Leu Pro Met Asn  
 100 105 110  
 Phe Thr Ser Tyr Ile Val Pro Val Cys Leu Pro Ser Arg Asp Met Gln  
 115 120 125  
 Leu Pro Ser Asn Val Ser Cys Trp Ile Thr Gly Trp Gly Met Ala Ile  
 130 135 140  
 Leu Gly Gly Leu  
 145

<210> 217  
 <211> 367  
 <212> PRT  
 <213> Mus musculus

<400> 217  
 Met Trp Gly Ser Arg Ala Gln Gln Ser Gly Pro Asp Arg Gly Gly Ala  
 1 5 10 15  
 Cys Leu Leu Ala Ala Phe Leu Leu Cys Phe Ser Leu Leu His Ala Gln  
 20 25 30  
 Asp Tyr Thr Pro Ser Gln Thr Pro Pro Pro Thr Ser Asn Thr Ser Leu  
 35 40 45  
 Lys Pro Arg Gly Arg Val Gln Lys Glu Leu Cys Gly Lys Thr Lys Phe  
 50 55 60  
 Gln Gly Lys Ile Tyr Gly Gly Gln Ile Ala Lys Ala Glu Arg Trp Pro  
 65 70 75 80  
 Trp Gln Ala Ser Leu Ile Phe Arg Gly Arg His Ile Cys Gly Ala Val

85	90	95
Leu Ile Asp Lys Thr Trp Leu Leu Ser Ala Ala His Cys Phe Gln Arg		
100	105	110
Ser Leu Thr Pro Ser Asp Tyr Arg Ile Leu Leu Gly Tyr Asn Gln Leu		
115	120	125
Ser Asn Pro Ser Asn Tyr Ser Arg Gln Met Thr Val Asn Lys Val Ile		
130	135	140
Leu His Glu Asp Tyr Ser Lys Leu Ser Arg Leu Glu Lys Asn Ile Val		
145	150	155
		160
Leu Ile Gln Leu His His Pro Val Ile Tyr Ser Thr His Ile Phe Pro		
165	170	175
Ala Cys Val Pro Asp Gly Thr Thr Lys Val Ser Pro Asn Asn Leu Cys		
180	185	190
Trp Ile Ser Gly Trp Gly Met Leu Ser Ala Asp Lys Phe Leu Gln Ala		
195	200	205
Pro Phe Pro Leu Leu Asp Ala Glu Val Ser Leu Ile Asp Glu Glu Glu		
210	215	220
Cys Thr Thr Phe Phe Gln Thr Pro Glu Val Ser Ile Thr Glu Tyr Asp		
225	230	235
		240
Val Ile Lys Asp Asp Val Leu Cys Ala Gly Asp Leu Thr Asn Gln Lys		
245	250	255
Ser Ser Cys Arg Gly Asp Ser Gly Gly Pro Leu Val Cys Phe Leu Asn		
260	265	270
Ser Phe Trp Tyr Val Val Gly Leu Ala Asn Trp Asn Gly Ala Cys Leu		
275	280	285
Glu Pro Ile His Ser Pro Asn Ile Phe Thr Lys Val Ser Tyr Phe Ser		
290	295	300
Asp Trp Ile Lys Gln Lys Lys Ala Asn Thr Pro Ala Ala Asp Val Ser		
305	310	315
		320
Ser Ala Pro Leu Glu Glu Met Ala Ser Ser Leu Arg Gly Trp Gly Asn		
325	330	335
Tyr Ser Ala Gly Ile Thr Leu Lys Pro Arg Ile Ser Thr Thr Leu Leu		



Lys Ala Cys Trp Ala Ser Gly Trp Gly Tyr Leu Arg Glu Asp Val Arg  
 195 200 205  
 Ile Pro Leu Pro Asn Glu Leu Tyr Glu Ala Glu Leu Ile Ile Met Ser  
 210 215 220  
 Asn Asp Gln Cys Lys Gly Phe Phe Pro Pro Pro Val Pro Gly Ser Ser  
 225 230 235 240  
 Arg Ser Tyr Tyr Ile Tyr Asp Asp Met Val Cys Ala Ala Asp Tyr Asp  
 245 250 255  
 Met Ser Lys Ser Ile Cys Ala Gly Asp Ser Gly Gly Pro Leu Val Cys  
 260 265 270  
 Leu Leu Glu Gly Ser Trp Tyr Val Val Gly Leu Thr Ser Trp Ser Ser  
 275 280 285  
 Thr Cys Glu Glu Pro Ile Val Ser Pro Ser Val Phe Ala Arg Val Ser  
 290 295 300  
 Tyr Phe Asp Lys Trp Ile Lys Asp Asn Lys Lys Ser Ser Ser Asn Ser  
 305 310 315 320  
 Lys Pro Gly Glu Ser Pro His His Pro Gly Ser Pro Glu Asn Glu Asn  
 325 330 335  
 Pro Glu Gly Asn Asn Lys Asn Gln Gly Thr Val Ile Lys Pro Val Cys  
 340 345 350  
 Thr Ala Leu Leu Leu Ser Gln Thr Leu Leu Gln Gln Leu Ile  
 355 360 365

<210> 219

<211> 389

<212> PRT

<213> *Xenopus laevis*

<400> 219

Met Leu Gln Tyr Leu Ser Phe Val Leu Ile Phe Ile His His Gln Ala  
 1 5 10 15

Cys Gly Val Pro Val Ile Ser Asn Arg Ile Val Gly Gly Met Asp Ser  
 20 25 30

Lys Arg Gly Glu Trp Pro Trp Gln Ile Ser Leu Ser Tyr Lys Ser Asp  
 35 40 45

Ser Ile Cys Gly Gly Ser Leu Leu Thr Asp Ser Trp Val Met Thr Ala  
 50 55 60

Ala His Cys Ile Asp Ser Leu Asp Val Ser Tyr Tyr Thr Val Tyr Leu  
 65 70 75 80

Gly Ala Tyr Gln Leu Ser Ala Pro Asp Asn Ser Thr Val Ser Arg Gly  
 85 90 95

Val Lys Ser Ile Thr Lys His Pro Asp Phe Gln Tyr Glu Gly Ser Ser  
 100 105 110

Gly Asp Ile Ala Leu Ile Glu Leu Glu Lys Pro Val Thr Phe Thr Pro  
 115 120 125

Tyr Ile Leu Pro Ile Cys Leu Pro Ser Gln Asp Val Gln Phe Ala Ala  
 130 135 140

Gly Thr Met Cys Trp Val Thr Gly Trp Gly Asn Ile Gln Glu Gly Thr  
 145 150 155 160

Pro Leu Ile Ser Pro Lys Thr Ile Gln Lys Ala Glu Val Ala Ile Ile  
 165 170 175

Asp Ser Ser Val Cys Gly Thr Met Tyr Glu Ser Ser Leu Gly Tyr Ile  
 180 185 190

Pro Asp Phe Ser Phe Ile Gln Glu Asp Met Val Cys Ala Gly Tyr Lys  
 195 200 205

Glu Gly Arg Ile Asp Ala Cys Gln Gly Asp Ser Gly Gly Pro Leu Val  
 210 215 220

Cys Asn Val Asn Asn Val Trp Leu Gln Leu Gly Ile Val Ser Trp Gly  
 225 230 235 240

Tyr Gly Cys Ala Glu Pro Asn Arg Pro Gly Val Tyr Thr Lys Val Gln  
 245 250 255

Tyr Tyr Gln Asp Trp Leu Lys Thr Asn Val Pro Leu Ile Val Phe Ser  
 260 265 270

Glu Glu Gly Pro Ser Val Ala Pro Ser Ile Gly Pro Ser Ile Ala Pro  
 275 280 285

Ser Phe Gly Pro Ser Leu Gly Pro Arg Gly Val Ala Ser Thr Thr Ile  
 290 295 300

Ser Gln Thr Glu Ala Gln Ser Val Asn Ser Ile Glu Ile Asp Lys Thr  
305 310 315 320

Asn Ser Thr Thr Ile Phe Glu Thr Glu Ala Met Ser Met Ser Asn Asn  
325 330 335

Thr Thr Met Asn Glu Thr Phe Ser Leu Val Ser Ser Thr Ile Ser Thr  
340 345 350

Ala Leu Arg Ile Asn Glu Thr Lys Thr Ile Asp Asn Glu Ala Gln Ile  
355 360 365

His Ala Cys Ser Leu His Thr Ile Ala Leu Thr Leu Ile Tyr Leu Phe  
370 375 380

Ile Arg Phe Phe Val  
385

<210> 220

<211> 186

<212> PRT

<213> Homo sapiens

<400> 220

Lys Ile Tyr Gly Gly Arg Asp Ala Ala Ala Gly Gln Trp Pro Trp Gln  
1 5 10 15

Ala Ser Leu Leu Tyr Trp Gly Ser His Leu Cys Gly Ala Val Leu Ile  
20 25 30

Asp Ser Cys Trp Leu Val Ser Thr Thr His Cys Phe Lys Ser Gln Ala  
35 40 45

Pro Lys Asn Tyr Gln Val Leu Leu Gly Asn Ile Gln Leu Tyr His Gln  
50 55 60

Thr Gln His Thr Gln Lys Met Ser Val His Arg Ile Ile Thr His Pro  
65 70 75 80

Asp Phe Glu Lys Leu His Pro Phe Gly Ser Asp Ile Ala Met Leu Gln  
85 90 95

Leu His Leu Pro Met Asn Phe Thr Ser Tyr Ile Val Pro Val Cys Leu  
100 105 110

Pro Ser Arg Asp Met Gln Leu Pro Ser Asn Val Ser Cys Trp Ile Thr



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115              120              125
Gly Trp Gly Met Leu Thr Glu Asp Leu Cys Ser Gln Gly Asp Ser Gly
130              135              140

Gly Pro Leu Val Cys Tyr Leu Pro Ser Ala Trp Val Leu Val Gly Leu
145              150              155              160

Ala Ser Trp Gly Leu Asp Cys Arg His Pro Ala Tyr Pro Ser Ile Phe
165              170              175

Thr Arg Val Thr Tyr Phe Ile Asn Trp Ile
180              185

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<210> 221

<211> 230

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Trypsin-like  
serine protease domain sequence

<400> 221

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Arg Ile Val Gly Gly Ser Glu Ala Asn Ile Gly Ser Phe Pro Trp Gln
1           5           10           15

Val Ser Leu Gln Tyr Arg Gly Gly Arg His Phe Cys Gly Gly Ser Leu
20          25          30

Ile Ser Pro Arg Trp Val Leu Thr Ala Ala His Cys Val Tyr Gly Ser
35          40          45

Ala Pro Ser Ser Ile Arg Val Arg Leu Gly Ser His Asp Leu Ser Ser
50          55          60

Gly Glu Glu Thr Gln Thr Val Lys Val Ser Lys Val Ile Val His Pro
65          70          75          80

Asn Tyr Asn Pro Ser Thr Tyr Asp Asn Asp Ile Ala Leu Leu Lys Leu
85          90          95

Ser Glu Pro Val Thr Leu Ser Asp Thr Val Arg Pro Ile Cys Leu Pro
100         105         110

Ser Ser Gly Tyr Asn Val Pro Ala Gly Thr Thr Cys Thr Val Ser Gly
115         120         125

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Trp Gly Arg Thr Ser Glu Ser Ser Gly Ser Leu Pro Asp Thr Leu Gln  
 130 135 140  
 Glu Val Asn Val Pro Ile Val Ser Asn Ala Thr Cys Arg Arg Ala Tyr  
 145 150 155 160  
 Ser Gly Gly Pro Ala Ile Thr Asp Asn Met Leu Cys Ala Gly Gly Leu  
 165 170 175  
 Glu Gly Gly Lys Asp Ala Cys Gln Gly Asp Ser Gly Gly Pro Leu Val  
 180 185 190  
 Cys Asn Asp Pro Arg Trp Val Leu Val Gly Ile Val Ser Trp Gly Ser  
 195 200 205  
 Tyr Gly Cys Ala Arg Pro Asn Lys Pro Gly Val Tyr Thr Arg Val Ser  
 210 215 220  
 Ser Tyr Leu Asp Trp Ile  
 225 230

<210> 222  
 <211> 230  
 <212> PRT  
 <213> Homo sapiens

<400> 222  
 Arg Ile Val Gly Gly Ser Glu Ala Asn Ile Gly Ser Phe Pro Trp Gln  
 1 5 10 15  
 Val Ser Leu Gln Tyr Arg Gly Gly Arg His Phe Cys Gly Gly Ser Leu  
 20 25 30  
 Ile Ser Pro Arg Trp Val Leu Thr Ala Ala His Cys Val Tyr Gly Ser  
 35 40 45  
 Ala Pro Ser Ser Ile Arg Val Arg Leu Gly Ser His Asp Leu Ser Ser  
 50 55 60  
 Gly Glu Glu Thr Gln Thr Val Lys Val Ser Lys Val Ile Val His Pro  
 65 70 75 80  
 Asn Tyr Asn Pro Ser Thr Tyr Asp Asn Asp Ile Ala Leu Leu Lys Leu  
 85 90 95  
 Ser Glu Pro Val Thr Leu Ser Asp Thr Val Arg Pro Ile Cys Leu Pro



Glu Gln Lys Phe Asp Val Lys Lys Ile Ile Val His Pro Asn Tyr Asn  
 65 70 75 80  
 Pro Asp Thr Asn Asp Ile Ala Leu Leu Lys Leu Lys Ser Pro Val Thr  
 85 90 95  
 Leu Gly Asp Thr Val Arg Pro Ile Cys Leu Pro Ser Ala Ser Ser Asp  
 100 105 110  
 Leu Pro Val Gly Thr Thr Cys Ser Val Ser Gly Trp Gly Arg Thr Lys  
 115 120 125  
 Asn Leu Gly Thr Ser Asp Thr Leu Gln Glu Val Val Val Pro Ile Val  
 130 135 140  
 Ser Arg Glu Thr Cys Arg Ser Ala Tyr Gly Gly Thr Val Thr Asp Thr  
 145 150 155 160  
 Met Ile Cys Ala Gly Ala Leu Gly Gly Lys Asp Ala Cys Gln Gly Asp  
 165 170 175  
 Ser Gly Gly Pro Leu Val Cys Ser Asp Gly Glu Leu Val Gly Ile Val  
 180 185 190  
 Ser Trp Gly Tyr Gly Cys Ala Val Gly Asn Tyr Pro Gly Val Tyr Thr  
 195 200 205  
 Arg Val Ser Arg Tyr Leu Asp Trp Ile  
 210 215

<210> 224  
 <211> 510  
 <212> PRT  
 <213> Homo sapiens

<400> 224  
 Met Asp Glu Lys Thr Lys Lys Ala Glu Glu Met Ala Leu Ser Leu Thr  
 1 5 10 15  
 Arg Ala Val Ala Gly Gly Asp Glu Gln Val Ala Met Lys Cys Ala Ile  
 20 25 30  
 Trp Leu Ala Glu Gln Arg Val Pro Leu Ser Val Gln Leu Lys Pro Glu  
 35 40 45  
 Val Ser Pro Thr Gln Asp Ile Arg Leu Trp Val Ser Val Glu Asp Ala

50                                      55                                      60  
 Gln Met His Thr Val Thr Ile Trp Leu Thr Val Arg Pro Asp Met Thr  
 65                                      70                                      75                                      80  
 Val Ala Ser Leu Lys Asp Met Val Phe Leu Asp Tyr Gly Phe Pro Pro  
 85                                      90                                      95  
 Val Leu Gln Gln Trp Val Ile Gly Gln Arg Leu Ala Arg Asp Gln Glu  
 100                                      105                                      110  
 Thr Leu His Ser His Gly Val Arg Gln Asn Gly Asp Ser Ala Tyr Leu  
 115                                      120                                      125  
 Tyr Leu Leu Ser Ala Arg Asn Thr Ser Leu Asn Pro Gln Glu Leu Gln  
 130                                      135                                      140  
 Arg Glu Arg Gln Leu Arg Met Leu Glu Asp Leu Gly Phe Lys Asp Leu  
 145                                      150                                      155                                      160  
 Thr Leu Gln Pro Arg Gly Pro Leu Glu Pro Gly Pro Pro Lys Pro Gly  
 165                                      170                                      175  
 Val Pro Gln Glu Pro Gly Arg Gly Gln Pro Asp Ala Val Pro Glu Pro  
 180                                      185                                      190  
 Pro Pro Val Gly Trp Gln Cys Pro Gly Cys Thr Phe Ile Asn Lys Pro  
 195                                      200                                      205  
 Thr Arg Pro Gly Cys Glu Met Cys Cys Arg Ala Arg Pro Glu Ala Tyr  
 210                                      215                                      220  
 Gln Val Pro Ala Ser Tyr Gln Pro Asp Glu Glu Glu Arg Ala Arg Leu  
 225                                      230                                      235                                      240  
 Ala Gly Glu Glu Glu Ala Leu Arg Gln Tyr Gln Gln Arg Lys Gln Gln  
 245                                      250                                      255  
 Gln Gln Glu Gly Asn Tyr Leu Gln His Val Gln Leu Asp Gln Arg Ser  
 260                                      265                                      270  
 Leu Val Leu Asn Thr Glu Pro Ala Glu Cys Pro Val Cys Tyr Ser Val  
 275                                      280                                      285  
 Leu Ala Pro Gly Glu Ala Val Val Leu Arg Glu Cys Leu His Thr Phe  
 290                                      295                                      300  
 Cys Arg Glu Cys Leu Gln Gly Thr Ile Arg Asn Ser Gln Glu Ala Glu

305                      310                      315                      320  
 Val Ser Cys Pro Phe Ile Asp Asn Thr Tyr Ser Cys Ser Gly Lys Leu  
                                  325                      330                      335  
 Leu Glu Arg Glu Ile Lys Ala Leu Leu Thr Pro Glu Asp Tyr Gln Arg  
                                  340                      345                      350  
 Phe Leu Asp Leu Gly Ile Ser Ile Ala Glu Asn Arg Ser Ala Phe Ser  
                                  355                      360                      365  
 Tyr His Cys Lys Thr Pro Asp Cys Lys Gly Trp Cys Phe Phe Glu Asp  
                                  370                      375                      380  
 Asp Val Asn Glu Phe Thr Cys Pro Val Cys Phe His Val Asn Cys Leu  
                                  385                      390                      395                      400  
 Leu Cys Lys Ala Ile His Glu Gln Met Asn Cys Lys Glu Tyr Gln Glu  
                                  405                      410                      415  
 Asp Leu Ala Leu Arg Ala Gln Asn Asp Val Ala Ala Arg Gln Thr Thr  
                                  420                      425                      430  
 Glu Met Leu Lys Val Met Leu Gln Gln Gly Glu Ala Met Arg Cys Pro  
                                  435                      440                      445  
 Gln Cys Gln Ile Val Val Gln Lys Lys Asp Gly Cys Asp Trp Ile Arg  
                                  450                      455                      460  
 Cys Thr Val Cys His Thr Glu Ile Cys Trp Val Thr Lys Gly Pro Arg  
                                  465                      470                      475                      480  
 Trp Gly Pro Gly Gly Pro Gly Asp Thr Ser Gly Gly Cys Arg Cys Arg  
                                  485                      490                      495  
 Val Asn Gly Ile Pro Cys His Pro Ser Cys Gln Asn Cys His  
                                  500                      505                      510

<210> 225

<211> 500

<212> PRT

<213> Homo sapiens

<400> 225

Met Ala Leu Ser Leu Thr Arg Ala Val Ala Gly Gly Asp Glu Gln Val  
   1                      5                      10                      15

Ala Met Lys Cys Ala Ile Trp Leu Ala Glu Gln Arg Val Pro Leu Ser  
                   20                                  25                                  30

Val Gln Leu Lys Pro Glu Val Ser Pro Thr Gln Asp Ile Arg Leu Trp  
                   35                                  40                                  45

Val Ser Val Glu Asp Ala Gln Met His Thr Val Thr Ile Trp Leu Thr  
                   50                                  55                                  60

Val Arg Pro Asp Met Thr Val Ala Ser Leu Lys Asp Met Val Phe Leu  
                   65                                  70                                  75                                  80

Asp Tyr Gly Phe Pro Pro Val Leu Gln Gln Trp Val Ile Gly Gln Arg  
                                   85                                  90                                  95

Leu Ala Arg Asp Gln Glu Thr Leu His Ser His Gly Val Arg Gln Asn  
                   100                                  105                                  110

Gly Asp Ser Ala Tyr Leu Tyr Leu Leu Ser Ala Arg Asn Thr Ser Leu  
                   115                                  120                                  125

Asn Pro Gln Glu Leu Gln Arg Glu Arg Gln Leu Arg Met Leu Glu Asp  
                   130                                  135                                  140

Leu Gly Phe Lys Asp Leu Thr Leu Gln Pro Arg Gly Pro Leu Glu Pro  
                   145                                  150                                  155                                  160

Gly Pro Pro Lys Pro Gly Val Pro Gln Glu Pro Gly Arg Gly Gln Pro  
                                   165                                  170                                  175

Asp Ala Val Pro Glu Pro Pro Pro Val Gly Trp Gln Cys Pro Gly Cys  
                   180                                  185                                  190

Thr Phe Ile Asn Lys Pro Thr Arg Pro Gly Cys Glu Met Cys Cys Arg  
                   195                                  200                                  205

Ala Arg Pro Glu Ala Tyr Gln Val Pro Ala Ser Tyr Gln Pro Asp Glu  
                   210                                  215                                  220

Glu Glu Arg Ala Arg Leu Ala Gly Glu Glu Glu Ala Leu Arg Gln Tyr  
                   225                                  230                                  235                                  240

Gln Gln Arg Lys Gln Gln Gln Gln Glu Gly Asn Tyr Leu Gln His Val  
                                   245                                  250                                  255

Gln Leu Asp Gln Arg Ser Leu Val Leu Asn Thr Glu Pro Ala Glu Cys  
                   260                                  265                                  270

Pro Val Cys Tyr Ser Val Leu Ala Pro Gly Glu Ala Val Val Leu Arg  
 275 280 285

Glu Cys Leu His Thr Phe Cys Arg Glu Cys Leu Gln Gly Thr Ile Arg  
 290 295 300

Asn Ser Gln Glu Ala Glu Val Ser Cys Pro Phe Ile Asp Asn Thr Tyr  
 305 310 315 320

Ser Cys Ser Gly Lys Leu Leu Glu Arg Glu Ile Lys Ala Leu Leu Thr  
 325 330 335

Pro Glu Asp Tyr Gln Arg Phe Leu Asp Leu Gly Ile Ser Ile Ala Glu  
 340 345 350

Asn Arg Ser Ala Phe Ser Tyr His Cys Lys Thr Pro Asp Cys Lys Gly  
 355 360 365

Trp Cys Phe Phe Glu Asp Asp Val Asn Glu Phe Thr Cys Pro Val Cys  
 370 375 380

Phe His Val Asn Cys Leu Leu Cys Lys Ala Ile His Glu Gln Met Asn  
 385 390 395 400

Cys Lys Glu Tyr Gln Glu Asp Leu Ala Leu Arg Ala Gln Asn Asp Val  
 405 410 415

Ala Ala Arg Gln Thr Thr Glu Met Leu Lys Val Met Leu Gln Gln Gly  
 420 425 430

Glu Ala Met Arg Cys Pro Gln Cys Gln Ile Val Val Gln Lys Lys Asp  
 435 440 445

Gly Cys Asp Trp Ile Arg Cys Thr Val Cys His Thr Glu Ile Cys Trp  
 450 455 460

Val Thr Lys Gly Pro Arg Trp Gly Pro Gly Gly Pro Gly Asp Thr Ser  
 465 470 475 480

Gly Gly Cys Arg Cys Arg Val Asn Gly Ile Pro Cys His Pro Ser Cys  
 485 490 495

Gln Asn Cys His  
 500

<210> 226  
 <211> 468



<212> PRT

<213> Homo sapiens

<400> 226

Met Gly Thr Ala Thr Pro Asp Gly Arg Glu Asp Gln Glu Arg Leu Trp  
1 5 10 15  
Val Ser Val Glu Asp Ala Gln Met His Thr Val Thr Ile Trp Leu Thr  
20 25 30  
Val Arg Pro Asp Met Thr Val Ala Ser Leu Lys Asp Met Val Phe Leu  
35 40 45  
Asp Tyr Gly Phe Pro Pro Val Leu Gln Gln Trp Val Ile Gly Gln Arg  
50 55 60  
Leu Ala Arg Asp Gln Glu Thr Leu His Ser His Gly Val Arg Gln Asn  
65 70 75 80  
Gly Asp Ser Ala Tyr Leu Tyr Leu Leu Ser Ala Arg Asn Thr Ser Leu  
85 90 95  
Asn Pro Gln Glu Leu Gln Arg Glu Arg Gln Leu Arg Met Leu Glu Asp  
100 105 110  
Leu Gly Phe Lys Asp Leu Thr Leu Gln Pro Arg Gly Pro Leu Glu Pro  
115 120 125  
Gly Pro Pro Lys Pro Gly Val Pro Gln Glu Pro Gly Arg Gly Gln Pro  
130 135 140  
Asp Ala Val Pro Glu Pro Pro Pro Val Gly Trp Gln Cys Pro Gly Cys  
145 150 155 160  
Thr Phe Ile Asn Lys Pro Thr Arg Pro Gly Cys Glu Met Cys Cys Arg  
165 170 175  
Ala Arg Pro Glu Ala Tyr Gln Val Pro Ala Ser Tyr Gln Pro Asp Glu  
180 185 190  
Glu Glu Arg Ala Arg Leu Ala Gly Glu Glu Glu Ala Leu Arg Gln Tyr  
195 200 205  
Gln Gln Arg Lys Gln Gln Gln Gln Glu Gly Asn Tyr Leu Gln His Val  
210 215 220  
Gln Leu Asp Gln Arg Ser Leu Val Leu Asn Thr Glu Pro Ala Glu Cys  
225 230 235 240

Pro Val Cys Tyr Ser Val Leu Ala Pro Gly Glu Ala Val Val Leu Arg  
 245 250 255  
 Glu Cys Leu His Thr Phe Cys Arg Glu Cys Leu Gln Gly Thr Ile Arg  
 260 265 270  
 Asn Ser Gln Glu Ala Glu Val Ser Cys Pro Phe Ile Asp Asn Thr Tyr  
 275 280 285  
 Ser Cys Ser Gly Lys Leu Leu Glu Arg Glu Ile Lys Ala Leu Leu Thr  
 290 295 300  
 Pro Glu Asp Tyr Gln Arg Phe Leu Asp Leu Gly Ile Ser Ile Ala Glu  
 305 310 315 320  
 Asn Arg Ser Ala Phe Ser Tyr His Cys Lys Thr Pro Asp Cys Lys Gly  
 325 330 335  
 Trp Cys Phe Phe Glu Asp Asp Val Asn Glu Phe Thr Cys Pro Val Cys  
 340 345 350  
 Phe His Val Asn Cys Leu Leu Cys Lys Ala Ile His Glu Gln Met Asn  
 355 360 365  
 Cys Lys Glu Tyr Gln Glu Asp Leu Ala Leu Arg Ala Gln Asn Asp Val  
 370 375 380  
 Ala Ala Arg Gln Thr Thr Glu Met Leu Lys Val Met Leu Gln Gln Gly  
 385 390 395 400  
 Glu Ala Met Arg Cys Pro Gln Cys Gln Ile Val Val Gln Lys Lys Asp  
 405 410 415  
 Gly Cys Asp Trp Ile Arg Cys Thr Val Cys His Thr Glu Ile Cys Trp  
 420 425 430  
 Val Thr Lys Gly Pro Arg Trp Gly Pro Gly Gly Pro Gly Asp Thr Ser  
 435 440 445  
 Gly Gly Cys Arg Cys Arg Val Asn Gly Ile Pro Cys His Pro Ser Cys  
 450 455 460  
 Gln Asn Cys His  
 465

<210> 227

<211> 498  
<212> PRT  
<213> Mus musculus

<400> 227

Met Ala Leu Ser Leu Ala Arg Ala Val Ala Gly Gly Asp Glu Gln Ala  
1 5 10 15  
Ala Ile Lys Tyr Ala Thr Trp Leu Ala Glu Gln Arg Val Pro Leu Arg  
20 25 30  
Val Gln Val Lys Pro Glu Val Ser Pro Thr Gln Asp Ile Arg Leu Cys  
35 40 45  
Val Ser Val Glu Asp Ala Tyr Met His Thr Val Thr Ile Trp Leu Thr  
50 55 60  
Val Arg Pro Asp Met Thr Val Ala Ser Leu Lys Asp Met Val Phe Leu  
65 70 75 80  
Asp Tyr Gly Phe Pro Pro Ser Leu Gln Gln Trp Val Val Gly Gln Arg  
85 90 95  
Leu Ala Arg Asp Gln Glu Thr Leu His Ser His Gly Ile Arg Arg Asn  
100 105 110  
Gly Asp Gly Ala Tyr Leu Tyr Leu Leu Ser Ala Arg Asn Thr Ser Leu  
115 120 125  
Asn Pro Gln Glu Leu Gln Arg Gln Arg Gln Leu Arg Met Leu Glu Asp  
130 135 140  
Leu Gly Phe Lys Asp Leu Thr Leu Gln Ser Arg Gly Pro Leu Glu Pro  
145 150 155 160  
Val Leu Pro Lys Pro Arg Thr Asn Gln Glu Pro Gly Gln Pro Asp Ala  
165 170 175  
Ala Pro Glu Ser Pro Pro Val Gly Trp Gln Cys Pro Gly Cys Thr Phe  
180 185 190  
Ile Asn Lys Pro Thr Arg Pro Gly Cys Glu Met Cys Cys Arg Ala Arg  
195 200 205  
Pro Glu Thr Tyr Gln Ile Pro Ala Ser Tyr Gln Pro Asp Glu Glu Glu  
210 215 220  
Arg Ala Arg Leu Ala Gly Glu Glu Glu Ala Leu Arg Gln Tyr Gln Gln



485

490

495

Cys His

&lt;210&gt; 228

&lt;211&gt; 498

&lt;212&gt; PRT

&lt;213&gt; Rattus norvegicus

&lt;400&gt; 228

Met Ala Leu Ser Leu Ala Arg Ala Val Thr Gly Gly Asp Glu Gln Ala  
 1 5 10 15  
 Ala Ile Lys Tyr Ala Thr Trp Leu Ala Glu Gln Lys Val Pro Leu Arg  
 20 25 30  
 Val Gln Val Lys Pro Glu Val Ser Pro Thr Gln Asp Ile Arg Leu Cys  
 35 40 45  
 Val Ser Val Glu Asp Ala Tyr Met His Thr Val Thr Ile Trp Leu Thr  
 50 55 60  
 Val Arg Pro Asp Met Thr Val Ala Ser Leu Lys Asp Met Val Phe Leu  
 65 70 75 80  
 Asp Tyr Gly Phe Pro Pro Ser Leu Gln Gln Trp Val Val Gly Gln Arg  
 85 90 95  
 Leu Ala Arg Asp Gln Glu Thr Leu His Ser His Gly Ile Arg Arg Asn  
 100 105 110  
 Gly Asp Ser Ala Tyr Leu Tyr Leu Leu Ser Ala Arg Asn Thr Ser Leu  
 115 120 125  
 Asn Pro Gln Glu Leu Gln Arg Gln Arg Gln Leu Arg Met Leu Glu Asp  
 130 135 140  
 Leu Gly Phe Lys Asp Leu Thr Leu Gln Pro Arg Gly Pro Leu Glu Pro  
 145 150 155 160  
 Val Leu Pro Lys Pro Arg Thr His Gln Glu Thr Gly Gln Pro Asp Ala  
 165 170 175  
 Ala Pro Glu Ser Pro Pro Val Gly Trp Gln Cys Pro Gly Cys Thr Phe  
 180 185 190

Ile	Asn	Lys	Pro	Thr	Arg	Pro	Gly	Cys	Glu	Met	Cys	Cys	Arg	Ala	Arg	195	200	205	
Pro	Glu	Ala	Tyr	Gln	Ile	Pro	Ala	Ser	Tyr	Gln	Pro	Asp	Glu	Glu	Glu	210	215	220	
Arg	Ala	Arg	Leu	Ala	Gly	Glu	Glu	Glu	Ala	Leu	Arg	Gln	Tyr	Glu	Gln	225	230	235	240
Arg	Lys	Gln	Gln	Gln	Gln	Glu	Gly	Asn	Tyr	Leu	Gln	His	Val	Gln	Leu	245	250	255	
Glu	Gln	Arg	Ser	Leu	Val	Leu	Asn	Thr	Glu	Pro	Ala	Glu	Cys	Pro	Val	260	265	270	
Cys	Tyr	Ser	Val	Leu	Ala	Pro	Gly	Glu	Ala	Val	Val	Leu	Arg	Glu	Cys	275	280	285	
Leu	His	Thr	Phe	Cys	Arg	Glu	Cys	Leu	Gln	Gly	Thr	Ile	Arg	Asn	Ser	290	295	300	
Gln	Glu	Ala	Glu	Val	Ser	Cys	Pro	Phe	Ile	Asp	Asn	Thr	Tyr	Ser	Cys	305	310	315	320
Pro	Gly	Lys	Leu	Leu	Glu	Arg	Glu	Ile	Arg	Ala	Leu	Leu	Ser	Pro	Glu	325	330	335	
Asp	Tyr	Gln	Arg	Phe	Leu	Asp	Leu	Gly	Val	Ser	Ile	Ala	Glu	Asn	Arg	340	345	350	
Ser	Thr	Leu	Ser	Tyr	His	Cys	Lys	Thr	Pro	Asp	Cys	Arg	Gly	Trp	Cys	355	360	365	
Phe	Phe	Glu	Asp	Asp	Val	Asn	Glu	Phe	Thr	Cys	Pro	Val	Cys	Thr	Arg	370	375	380	
Val	Asn	Cys	Leu	Leu	Cys	Lys	Ala	Ile	His	Glu	Arg	Met	Asn	Cys	Arg	385	390	395	400
Glu	Tyr	Gln	Asp	Asp	Leu	Ala	His	Arg	Ala	Arg	Asn	Asp	Val	Ala	Ala	405	410	415	
Gln	Gln	Thr	Thr	Glu	Met	Leu	Arg	Val	Met	Leu	Gln	Gln	Gly	Glu	Ala	420	425	430	
Met	Tyr	Cys	Pro	Gln	Cys	Arg	Ile	Val	Val	Gln	Lys	Lys	Asp	Gly	Cys	435	440	445	

Asp Trp Ile Arg Cys Thr Val Cys His Thr Glu Ile Cys Trp Val Thr  
 450 455 460

Lys Gly Pro Arg Trp Gly Pro Gly Gly Pro Gly Asp Thr Ser Gly Gly  
 465 470 475 480

Cys Arg Cys Arg Val Asn Gly Ile Pro Cys His Pro Ser Cys Gln Asn  
 485 490 495

Cys His

<210> 229

<211> 32

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: zf-RanBP  
 domain sequence

<400> 229

Arg Ala Gly Ser Asp Trp Asp Cys Ile Ser Ser Cys Leu Val Gln Asn  
 1 5 10 15

Phe Ala Thr Ser Thr Lys Cys Val Ala Cys Gln Ala Pro Lys Pro Ser  
 20 25 30

<210> 230

<211> 29

<212> PRT

<213> Homo sapiens

<400> 230

Pro Val Gly Trp Gln Cys Pro Gly Cys Thr Phe Ile Asn Lys Pro Thr  
 1 5 10 15

Arg Pro Gly Cys Glu Met Cys Cys Arg Ala Arg Pro Glu  
 20 25

<210> 231

<211> 53

<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zf-C3HC4  
domain sequence

<400> 231  
Cys Pro Ile Cys Leu Thr Thr Phe Asp Leu Asp Glu Pro Lys Pro Phe  
1 5 10 15  
Lys Glu Pro Val Leu Leu Pro Cys Gly His Ser Phe Cys Ser Lys Cys  
20 25 30  
Ile Val Glu Leu Leu Arg Leu Ser Gln Asn Ser Lys Asn Asn Ser Val  
35 40 45  
Tyr Lys Cys Pro Leu  
50

<210> 232  
<211> 44  
<212> PRT  
<213> Homo sapiens

<400> 232  
Cys Pro Val Cys Tyr Ser Val Leu Ala Pro Gly Glu Ala Val Val Leu  
1 5 10 15  
Arg Glu Cys Leu His Thr Phe Cys Arg Glu Cys Leu Gln Gly Thr Ile  
20 25 30  
Arg Asn Ser Gln Glu Ala Glu Val Ser Cys Pro Phe  
35 40

<210> 233  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zf-C3HC4  
domain sequence

<400> 233  
Asn Ser Val Tyr Lys Cys Pro Leu Cys



1 5

<210> 234  
<211> 8  
<212> PRT  
<213> Homo sapiens

<400> 234  
Asn Glu Phe Thr Cys Pro Val Cys  
1 5

<210> 235  
<211> 72  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: IBR domain  
sequence

<400> 235  
Glu Lys Tyr Glu Lys Phe Met Val Arg Ser Tyr Val Glu Lys Asn Pro  
1 5 10 15

Asp Leu Lys Trp Cys Pro Gly Pro Asp Cys Ser Tyr Ala Val Arg Leu  
20 25 30

Thr Glu Val Ser Ser Ser Thr Glu Leu Ala Glu Pro Pro Arg Val Glu  
35 40 45

Cys Lys Lys Pro Ala Cys Gly Thr Ser Phe Cys Phe Lys Cys Gly Ala  
50 55 60

Glu Trp His Ala Pro Val Ser Cys  
65 70

<210> 236  
<211> 61  
<212> PRT  
<213> Homo sapiens

<400> 236  
Gln Arg Phe Leu Asp Leu Gly Ile Ser Ile Ala Glu Asn Arg Ser Ala  
1 5 10 15

Phe Ser Tyr His Cys Lys Thr Pro Asp Cys Lys Gly Trp Cys Phe Phe  
 20 25 30

Glu Asp Asp Val Asn Glu Phe Thr Cys Pro Val Cys Phe His Val Asn  
 35 40 45

Cys Leu Leu Cys Lys Ala Ile His Glu Gln Met Asn Cys  
 50 55 60

<210> 237

<211> 61

<212> PRT

<213> Homo sapiens

<400> 237

Thr Ile Trp Leu Thr Val Arg Pro Asp Met Thr Val Ala Ser Leu Lys  
 1 5 10 15

Asp Met Val Phe Leu Asp Tyr Gly Phe Pro Pro Val Leu Gln Gln Trp  
 20 25 30

Val Ile Gly Gln Arg Leu Ala Arg Asp Gln Glu Thr Leu His Ser His  
 35 40 45

Gly Val Arg Gln Asn Gly Asp Ser Ala Tyr Leu Tyr Leu  
 50 55 60

<210> 238

<211> 60

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Ubiquitin  
 homologues domain sequence

<400> 238

Thr Ile Thr Leu Glu Val Lys Pro Ser Asp Thr Val Ser Glu Leu Lys  
 1 5 10 15

Glu Lys Ile Ala Asp Leu Glu Gly Ile Pro Pro Glu Gln Gln Arg Leu  
 20 25 30

Ile Tyr Lys Gly Lys Val Leu Glu Asp Asp Arg Thr Leu Ala Glu Tyr  
 35 40 45

Gly Ile Gln Asp Gly Ser Thr Ile His Leu Val Leu  
 50 55 60

<210> 239  
 <211> 337  
 <212> PRT  
 <213> Homo sapiens

<400> 239  
 Met Asn Pro Glu Ser Ser Ile Phe Ile Glu Asp Tyr Leu Lys Tyr Phe  
 1 5 10 15

Gln Asp Gln Val Ser Arg Glu Asn Leu Leu Gln Leu Leu Thr Asp Asp  
 20 25 30

Glu Ala Trp Asn Gly Phe Val Ala Ala Ala Glu Leu Pro Arg Asp Glu  
 35 40 45

Ala Asp Glu Leu Arg Lys Ala Leu Asn Lys Leu Ala Ser His Met Val  
 50 55 60

Met Lys Asp Lys Asn Arg His Asp Lys Asp Gln Gln His Arg Gln Trp  
 65 70 75 80

Phe Leu Lys Glu Phe Pro Arg Leu Lys Arg Glu Leu Glu Asp His Ile  
 85 90 95

Arg Lys Leu Arg Ala Leu Ala Glu Glu Val Glu Gln Val His Arg Gly  
 100 105 110

Thr Thr Ile Ala Asn Val Val Ser Asn Ser Val Gly Thr Thr Ser Gly  
 115 120 125

Ile Leu Thr Leu Leu Gly Leu Gly Leu Ala Pro Phe Thr Glu Gly Ile  
 130 135 140

Ser Phe Val Leu Leu Asp Thr Gly Met Gly Leu Gly Ala Ala Ala Ala  
 145 150 155 160

Val Ala Gly Ile Thr Cys Ser Val Val Glu Leu Val Asn Lys Leu Arg  
 165 170 175

Ala Arg Ala Gln Ala Arg Asn Leu Asp Gln Ser Gly Thr Asn Val Ala  
 180 185 190

Lys Val Met Lys Glu Phe Val Gly Gly Asn Thr Pro Asn Val Leu Thr  
 195 200 205

Leu Val Asp Asn Trp Tyr Gln Val Thr Gln Gly Ile Gly Arg Asn Ile  
 210 215 220  
 Arg Ala Ile Arg Arg Ala Arg Ala Asn Pro Gln Leu Gly Ala Tyr Ala  
 225 230 235 240  
 Pro Pro Pro His Val Ile Gly Arg Ile Ser Ala Glu Gly Gly Glu Gln  
 245 250 255  
 Val Glu Arg Val Val Glu Gly Pro Ala Gln Ala Met Ser Arg Gly Thr  
 260 265 270  
 Met Ile Val Gly Ala Ala Thr Gly Gly Ile Leu Leu Leu Leu Asp Val  
 275 280 285  
 Val Ser Leu Ala Tyr Glu Ser Lys His Leu Leu Glu Gly Ala Lys Ser  
 290 295 300  
 Glu Ser Ala Glu Glu Leu Lys Lys Arg Ala Gln Glu Leu Glu Gly Lys  
 305 310 315 320  
 Leu Asn Phe Leu Thr Lys Ile His Glu Met Leu Gln Pro Gly Gln Asp  
 325 330 335  
 Gln

<210> 240  
 <211> 337  
 <212> PRT  
 <213> Homo sapiens

<400> 240  
 Met Asn Pro Glu Ser Ser Ile Phe Ile Glu Asp Tyr Leu Lys Tyr Phe  
 1 5 10 15  
 Gln Asp Gln Val Ser Arg Glu Asn Leu Leu Gln Leu Leu Thr Asp Asp  
 20 25 30  
 Glu Ala Trp Asn Gly Phe Val Ala Ala Ala Glu Leu Pro Arg Asp Glu  
 35 40 45  
 Ala Asp Glu Leu Arg Lys Ala Leu Asn Lys Leu Ala Ser His Met Val  
 50 55 60  
 Met Lys Asp Lys Asn Arg His Asp Lys Asp Gln Gln His Arg Gln Trp

65		70		75		80									
Phe	Leu	Lys	Glu	Phe	Pro	Arg	Leu	Lys	Arg	Glu	Leu	Glu	Asp	His	Ile
			85						90					95	
Arg	Lys	Leu	Arg	Ala	Leu	Ala	Glu	Glu	Val	Glu	Gln	Val	His	Arg	Gly
		100						105					110		
Thr	Thr	Ile	Ala	Asn	Val	Val	Ser	Asn	Ser	Val	Gly	Thr	Thr	Ser	Gly
		115						120					125		
Ile	Leu	Thr	Leu	Leu	Gly	Leu	Gly	Leu	Ala	Pro	Phe	Thr	Glu	Gly	Ile
		130				135					140				
Ser	Phe	Val	Leu	Leu	Asp	Thr	Gly	Met	Gly	Leu	Gly	Ala	Ala	Ala	Ala
145					150					155					160
Val	Ala	Gly	Ile	Thr	Cys	Ser	Val	Val	Glu	Leu	Val	Asn	Lys	Leu	Arg
			165						170					175	
Ala	Arg	Ala	Gln	Ala	Arg	Asn	Leu	Asp	Gln	Ser	Gly	Thr	Asn	Val	Ala
		180						185						190	
Lys	Val	Met	Lys	Glu	Phe	Val	Gly	Gly	Asn	Thr	Pro	Asn	Val	Leu	Thr
		195						200					205		
Leu	Val	Asp	Asn	Trp	Tyr	Gln	Val	Thr	Gln	Gly	Ile	Gly	Arg	Asn	Ile
		210				215					220				
Arg	Ala	Ile	Arg	Arg	Ala	Arg	Ala	Asn	Pro	Gln	Leu	Gly	Ala	Tyr	Ala
225					230					235					240
Pro	Pro	Pro	His	Ile	Ile	Gly	Arg	Ile	Ser	Ala	Glu	Gly	Gly	Glu	Gln
			245						250					255	
Val	Glu	Arg	Val	Val	Glu	Gly	Pro	Ala	Gln	Ala	Met	Ser	Arg	Gly	Thr
		260						265					270		
Met	Ile	Val	Gly	Ala	Ala	Thr	Gly	Gly	Ile	Leu	Leu	Leu	Leu	Asp	Val
		275						280					285		
Val	Ser	Leu	Ala	Tyr	Glu	Ser	Lys	His	Leu	Leu	Glu	Gly	Ala	Lys	Ser
		290					295				300				
Glu	Ser	Ala	Glu	Glu	Leu	Lys	Lys	Arg	Ala	Gln	Glu	Leu	Glu	Gly	Lys
305					310					315					320
Leu	Asn	Phe	Leu	Thr	Lys	Ile	His	Glu	Met	Leu	Gln	Pro	Gly	Gln	Asp



Ala Glu Gly Gly Glu Gln Val Glu Arg Val Val Glu Gly Pro Ala Gln  
195 200 205

Ala Met Ser Arg Gly Thr Met Ile Val Gly Ala Ala Thr Gly Gly Ile  
210 215 220

Leu Leu Leu Leu Asp Val Val Ser Leu Ala Tyr Glu Ser Lys His Leu  
225 230 235 240

Leu Glu Gly Ala Lys Ser Glu Ser Ala Glu Glu Leu Lys Lys Arg Ala  
245 250 255

Gln Glu Leu Glu Gly Lys Leu Asn Phe Leu Thr Lys Ile His Glu Met  
260 265 270

Leu Gln Pro Gly Gln Asp Gln  
275

<210> 242

<211> 414

<212> PRT

<213> Homo sapiens

<400> 242

Met Arg Phe Lys Ser His Thr Val Glu Leu Arg Arg Pro Cys Ser Asp  
1 5 10 15

Met Glu Gly Ala Ala Leu Leu Arg Val Ser Val Leu Cys Ile Trp Met  
20 25 30

Ser Ala Leu Phe Leu Gly Val Arg Val Arg Ala Glu Glu Ala Gly Ala  
35 40 45

Arg Val Gln Gln Asn Val Pro Ser Gly Thr Asp Thr Gly Asp Pro Gln  
50 55 60

Ser Lys Pro Leu Gly Asp Trp Ala Ala Gly Thr Met Asp Pro Glu Ser  
65 70 75 80

Ser Ile Phe Ile Glu Asp Ala Ile Lys Tyr Phe Lys Glu Lys Val Ser  
85 90 95

Thr Gln Asn Leu Leu Leu Leu Leu Thr Asp Asn Glu Ala Trp Asn Gly  
100 105 110

Phe Val Ala Ala Ala Glu Leu Pro Arg Asn Glu Ala Asp Glu Leu Arg  
115 120 125

Lys Ala Leu Asp Asn Leu Ala Arg Gln Met Ile Met Lys Asp Lys Asn  
 130 135 140

Trp His Asp Lys Gly Gln Gln Tyr Arg Asn Trp Phe Leu Lys Glu Phe  
 145 150 155 160

Pro Arg Leu Lys Ser Lys Leu Glu Asp Asn Ile Arg Arg Leu Arg Ala  
 165 170 175

Leu Ala Asp Gly Val Gln Lys Val His Lys Gly Thr Thr Ile Ala Asn  
 180 185 190

Val Val Ser Gly Ser Leu Ser Ile Ser Ser Gly Ile Leu Thr Leu Val  
 195 200 205

Gly Met Gly Leu Ala Pro Phe Thr Glu Gly Gly Ser Leu Val Leu Leu  
 210 215 220

Glu Pro Gly Met Glu Leu Gly Ile Thr Ala Ala Leu Thr Gly Ile Thr  
 225 230 235 240

Ser Ser Thr Ile Asp Tyr Gly Lys Lys Trp Trp Thr Gln Ala Gln Ala  
 245 250 255

His Asp Leu Val Ile Lys Ser Leu Asp Lys Leu Lys Glu Val Lys Glu  
 260 265 270

Phe Leu Gly Glu Asn Ile Ser Asn Phe Leu Ser Leu Ala Gly Asn Thr  
 275 280 285

Tyr Gln Leu Thr Arg Gly Ile Gly Lys Asp Ile Arg Ala Leu Arg Arg  
 290 295 300

Ala Arg Ala Asn Leu Gln Ser Val Pro His Ala Ser Ala Ser Arg Pro  
 305 310 315 320

Arg Val Thr Glu Pro Ile Ser Ala Glu Ser Gly Glu Gln Val Glu Arg  
 325 330 335

Val Asn Glu Pro Ser Ile Leu Glu Met Ser Arg Gly Val Lys Leu Thr  
 340 345 350

Asp Val Ala Pro Val Ser Phe Phe Leu Val Leu Asp Val Val Tyr Leu  
 355 360 365

Val Tyr Glu Ser Lys His Leu His Glu Gly Ala Lys Ser Glu Thr Ala  
 370 375 380



Glu Glu Leu Lys Lys Val Ala Gln Glu Leu Glu Glu Lys Leu Asn Ile  
 385 390 395 400

Leu Asn Asn Asn Tyr Lys Ile Leu Gln Ala Asp Gln Glu Leu  
 405 410

<210> 243

<211> 398

<212> PRT

<213> Homo sapiens

<400> 243

Met Glu Gly Ala Ala Leu Leu Arg Val Ser Val Leu Cys Ile Trp Met  
 1 5 10 15

Ser Ala Leu Phe Leu Gly Val Gly Val Arg Ala Glu Glu Ala Gly Ala  
 20 25 30

Arg Val Gln Gln Asn Val Pro Ser Gly Thr Asp Thr Gly Asp Pro Gln  
 35 40 45

Ser Lys Pro Leu Gly Asp Trp Ala Ala Gly Thr Met Asp Pro Glu Ser  
 50 55 60

Ser Ile Phe Ile Glu Asp Ala Ile Lys Tyr Phe Lys Glu Lys Val Ser  
 65 70 75 80

Thr Gln Asn Leu Leu Leu Leu Leu Thr Asp Asn Glu Ala Trp Asn Gly  
 85 90 95

Phe Val Ala Ala Ala Glu Leu Pro Arg Asn Glu Ala Asp Glu Leu Arg  
 100 105 110

Lys Ala Leu Asp Asn Leu Ala Arg Gln Met Ile Met Lys Asp Lys Asn  
 115 120 125

Trp His Asp Lys Gly Gln Gln Tyr Arg Asn Trp Phe Leu Lys Glu Phe  
 130 135 140

Pro Arg Leu Lys Ser Glu Leu Glu Asp Asn Ile Arg Arg Leu Arg Ala  
 145 150 155 160

Leu Ala Asp Gly Val Gln Lys Val His Lys Gly Thr Thr Ile Ala Asn  
 165 170 175

Val Val Ser Gly Ser Leu Ser Ile Ser Ser Gly Ile Leu Thr Leu Val

	180		185		190
Gly Met Gly Leu Ala Pro Phe Thr Glu Gly Gly Ser Leu Val Leu Leu					
	195		200		205
Glu Pro Gly Met Glu Leu Gly Ile Thr Ala Ala Leu Thr Gly Ile Thr					
	210		215		220
Ser Ser Thr Ile Asp Tyr Gly Lys Lys Trp Trp Thr Gln Ala Gln Ala					
	225		230		235 240
His Asp Leu Val Ile Lys Ser Leu Asp Lys Leu Lys Glu Val Lys Glu					
		245		250	255
Phe Leu Gly Glu Asn Ile Ser Asn Phe Leu Ser Leu Ala Gly Asn Thr					
	260		265		270
Tyr Gln Leu Thr Arg Gly Ile Gly Lys Asp Ile Arg Ala Leu Arg Arg					
	275		280		285
Ala Arg Ala Asn Leu Gln Ser Val Pro His Ala Ser Ala Ser Arg Pro					
	290		295		300
Arg Val Thr Glu Pro Ile Ser Ala Glu Ser Gly Glu Gln Val Glu Arg					
	305		310		315 320
Val Asn Glu Pro Ser Ile Leu Glu Met Ser Arg Gly Val Lys Leu Thr					
		325		330	335
Asp Val Ala Pro Val Gly Phe Phe Leu Val Leu Asp Val Val Tyr Leu					
	340		345		350
Val Tyr Glu Ser Lys His Leu His Glu Gly Ala Lys Ser Glu Thr Ala					
	355		360		365
Glu Glu Leu Lys Lys Val Ala Gln Glu Leu Glu Glu Lys Leu Asn Met					
	370		375		380
Leu Asn Asn Asn Tyr Lys Ile Leu Gln Ala Asp Gln Glu Leu					
	385		390		395

<210> 244

<211> 479

<212> PRT

<213> Homo sapiens

<400> 244

Met	Ala	Trp	Asn	Thr	Asn	Leu	Arg	Trp	Arg	Leu	Pro	Leu	Thr	Cys	Leu	1	5	10	15
Leu	Leu	Gln	Val	Ile	Met	Val	Ile	Leu	Phe	Gly	Val	Phe	Val	Arg	Tyr	20	25	30	
Asp	Phe	Glu	Ala	Asp	Ala	His	Trp	Trp	Ser	Glu	Arg	Thr	His	Lys	Asn	35	40	45	
Leu	Ser	Asp	Met	Glu	Asn	Glu	Phe	Tyr	Tyr	Arg	Tyr	Pro	Ser	Phe	Gln	50	55	60	
Asp	Val	His	Val	Met	Val	Phe	Val	Gly	Phe	Gly	Phe	Leu	Met	Thr	Phe	65	70	75	80
Leu	Gln	Arg	Tyr	Gly	Phe	Ser	Ala	Val	Gly	Phe	Asn	Phe	Leu	Leu	Ala	85	90	95	
Ala	Phe	Gly	Ile	Gln	Trp	Ala	Leu	Leu	Met	Gln	Gly	Trp	Phe	His	Phe	100	105	110	
Leu	Gln	Asp	Arg	Tyr	Ile	Val	Val	Gly	Val	Glu	Asn	Leu	Ile	Asn	Ala	115	120	125	
Asp	Phe	Cys	Val	Ala	Ser	Val	Cys	Val	Ala	Phe	Gly	Ala	Val	Leu	Gly	130	135	140	
Lys	Val	Ser	Pro	Ile	Gln	Leu	Leu	Ile	Met	Thr	Phe	Phe	Gln	Val	Thr	145	150	155	160
Leu	Phe	Ala	Val	Asn	Glu	Phe	Ile	Leu	Leu	Asn	Leu	Leu	Lys	Val	Lys	165	170	175	
Asp	Ala	Gly	Gly	Ser	Met	Thr	Ile	His	Thr	Phe	Gly	Ala	Tyr	Phe	Gly	180	185	190	
Leu	Thr	Val	Thr	Arg	Ile	Leu	Tyr	Arg	Arg	Asn	Leu	Glu	Gln	Ser	Lys	195	200	205	
Glu	Arg	Gln	Asn	Ser	Val	Tyr	Gln	Ser	Asp	Leu	Phe	Ala	Met	Ile	Gly	210	215	220	
Thr	Leu	Phe	Leu	Trp	Met	Tyr	Trp	Pro	Ser	Phe	Asn	Ser	Ala	Ile	Ser	225	230	235	240
Tyr	His	Gly	Asp	Ser	Gln	His	Arg	Ala	Ala	Ile	Asn	Thr	Tyr	Cys	Ser	245	250	255	

Leu Ala Ala Cys Val Leu Thr Ser Val Ala Ile Ser Ser Ala Leu His  
260 265 270

Lys Lys Gly Lys Leu Asp Met Val His Ile Gln Asn Ala Thr Leu Ala  
275 280 285

Gly Gly Val Ala Val Gly Thr Ala Ala Glu Met Met Leu Met Pro Tyr  
290 295 300

Gly Ala Leu Ile Ile Gly Phe Val Cys Gly Ile Ile Ser Thr Leu Gly  
305 310 315 320

Phe Val Tyr Leu Thr Pro Phe Leu Glu Ser Arg Leu His Ile Gln Asp  
325 330 335

Thr Cys Gly Ile Asn Asn Leu His Gly Ile Pro Gly Ile Ile Gly Gly  
340 345 350

Ile Val Gly Ala Val Thr Ala Ala Ser Ala Ser Leu Glu Val Tyr Gly  
355 360 365

Lys Glu Gly Leu Val His Ser Phe Asp Phe Gln Gly Phe Asn Gly Asp  
370 375 380

Trp Thr Ala Arg Thr Gln Gly Lys Phe Gln Ile Tyr Gly Leu Leu Val  
385 390 395 400

Thr Leu Ala Met Ala Leu Met Gly Gly Ile Ile Val Gly Leu Ile Leu  
405 410 415

Arg Leu Pro Phe Trp Gly Gln Pro Ser Asp Glu Asn Cys Phe Glu Asp  
420 425 430

Ala Val Tyr Trp Glu Met Pro Glu Gly Asn Ser Thr Val Tyr Ile Pro  
435 440 445

Glu Asp Pro Thr Phe Lys Pro Ser Gly Pro Ser Val Pro Ser Val Pro  
450 455 460

Met Val Ser Pro Leu Pro Met Ala Ser Ser Val Pro Leu Val Pro  
465 470 475

<210> 245  
<211> 498  
<212> PRT  
<213> Mus musculus

<400> 245

Met Ala Trp Asn Thr Asn Leu Arg Gly Arg Leu Pro Ile Thr Cys Leu  
1 5 10 15

Ile Leu Gln Val Thr Met Val Val Leu Phe Gly Val Phe Val Arg Tyr  
20 25 30

Asp Ile Gln Ala Asp Ala His Trp Trp Leu Glu Lys Lys Arg Lys Asn  
35 40 45

Ile Ser Ser Asp Val Glu Asn Glu Phe Tyr Tyr Arg Tyr Pro Ser Phe  
50 55 60

Gln Asp Val His Ala Met Val Phe Val Gly Phe Gly Phe Leu Met Thr  
65 70 75 80

Phe Leu Gln Arg Tyr Gly Phe Ser Ala Val Gly Phe Asn Phe Leu Leu  
85 90 95

Ala Ala Phe Gly Ile Gln Trp Ala Leu Leu Met Gln Gly Trp Phe His  
100 105 110

Tyr Phe Glu Glu Gly His Ile Val Leu Ser Val Glu Asn Ile Ile Gln  
115 120 125

Ala Asp Phe Cys Val Ala Ser Ser Cys Val Ala Phe Gly Ala Val Leu  
130 135 140

Gly Lys Val Ser Pro Met Gln Leu Leu Ile Met Thr Phe Phe Gln Val  
145 150 155 160

Thr Leu Phe Thr Val Asn Glu Phe Ile Leu Leu Asn Leu Ile Glu Ala  
165 170 175

Lys Asp Ala Gly Gly Ser Met Thr Ile His Thr Phe Gly Ala Tyr Phe  
180 185 190

Gly Leu Thr Val Thr Trp Ile Leu Tyr Arg Lys Asn Leu Asp Gln Ser  
195 200 205

Lys Gln Arg Gln Ser Ser Val Tyr His Ser Asp Leu Phe Ala Met Ile  
210 215 220

Gly Thr Leu Phe Leu Trp Ile Tyr Trp Pro Ser Phe Asn Ser Ala Ser  
225 230 235 240

Ser Phe His Gly Asp Ala Gln His Arg Ala Ala Leu Asn Thr Tyr Leu  
245 250 255

Ser Leu Ala Ala Ser Val Leu Thr Thr Val Thr Val Ser Ser Ile Val  
 260 265 270  
 His Lys Lys Gly Lys Leu Asp Met Val His Ile Gln Asn Ala Thr Leu  
 275 280 285  
 Ala Gly Gly Val Gly Val Gly Thr Ala Ala Glu Met Met Leu Thr Pro  
 290 295 300  
 Tyr Gly Ala Leu Ile Val Gly Phe Phe Cys Gly Ile Phe Ser Thr Leu  
 305 310 315 320  
 Gly Phe Ala Tyr Leu Thr Pro Phe Leu Glu Ser Arg Leu Arg Ile Gln  
 325 330 335  
 Asp Thr Cys Gly Ile His Asn Leu His Gly Ile Pro Gly Ile Ile Gly  
 340 345 350  
 Gly Ile Val Gly Ala Val Thr Ala Ala Tyr Ser Ser Pro Asp Val Tyr  
 355 360 365  
 Gly Glu Pro Gly Ile Val His Ser Phe Gly Phe Gly Ser Tyr Lys Met  
 370 375 380  
 Asp Trp Asn Lys Arg Met Gln Gly Arg Ser Gln Ile Phe Gly Leu Leu  
 385 390 395 400  
 Leu Ser Leu Ala Met Ala Leu Val Gly Gly Ile Ile Val Gly Phe Ile  
 405 410 415  
 Leu Lys Leu Pro Phe Trp Gly Gln Ala Ala Asp Glu Asn Cys Phe Glu  
 420 425 430  
 Asp Ser Ile Tyr Trp Glu Val His Glu Glu Val Asn Thr Val Tyr Ile  
 435 440 445  
 Pro Glu Asp Leu Ala His Lys His Ser Thr Ser Leu Val Pro Ala Met  
 450 455 460  
 Pro Leu Val Leu Pro Thr Thr Ser Ala Ser Ile Val Pro Pro Val Pro  
 465 470 475 480  
 Pro Thr Pro Pro Val Ser Leu Ala Thr Ser Ala Pro Ser Ala Ala Leu  
 485 490 495  
 Val His

<210> 246  
<211> 459  
<212> PRT  
<213> Bos taurus

<400> 246

Met Ile Trp Asn Thr Asn Leu Arg Trp Arg Leu Pro Val Ala Cys Leu  
1 5 10 15  
Leu Leu Glu Val Ala Leu Ile Ala Leu Phe Gly Val Phe Val Arg Tyr  
20 25 30  
Asp Met Asp Ala Asp Pro His Trp Val Gln Glu Lys Val Ile Lys Asn  
35 40 45  
Leu Ser Thr Asp Leu Glu Asn Glu Phe Tyr Tyr Arg Tyr Pro Ser Phe  
50 55 60  
Gln Asp Val His Val Met Ile Phe Val Gly Phe Gly Phe Leu Met Thr  
65 70 75 80  
Phe Leu Gln Arg Tyr Gly Tyr Ser Ser Val Gly Phe Asn Phe Leu Ala  
85 90 95  
Ala Phe Gly Ile Gln Trp Ala Leu Leu Met Gln Gly Trp Leu Gln Ser  
100 105 110  
Phe Asp Gly Arg Tyr Ile Leu Val Asp Leu Glu Asn Leu Ile Asn Ala  
115 120 125  
Asp Phe Cys Val Gly Ser Val Cys Val Ala Phe Gly Ala Val Leu Gly  
130 135 140  
Lys Val Ser Pro Val Gln Leu Leu Ile Met Thr Leu Phe Gln Val Thr  
145 150 155 160  
Leu Phe Ser Ile Asn Glu Tyr Ile Leu Leu Asn Leu Leu Glu Val Lys  
165 170 175  
Asp Ser Gly Gly Ser Met Thr Ile His Ala Phe Gly Ala Tyr Phe Gly  
180 185 190  
Leu Thr Val Ala Trp Ile Leu Tyr Arg Pro Asn Leu His Leu Ser Lys  
195 200 205  
Glu Arg Gln Ser Ser Thr Tyr His Ser Asp Leu Phe Ala Met Ile Gly





<210> 247

<211> 467

<212> PRT

<213> *Oryzctolagus cuniculus*

<400> 247

Met Ala Trp Asn Thr Asn Leu Arg Trp Arg Leu Pro Leu Leu Cys Leu  
1 5 10 15

Val Leu Glu Val Ala Met Val Val Leu Phe Gly Leu Phe Val Arg Tyr  
20 25 30

Ser Pro Asp Ala Asp Ser Ser Trp Ser Asn Glu Lys Arg Lys Gly Asn  
35 40 45

Ile Thr Ser Asp Leu Glu Asn Glu Phe Tyr Tyr Arg Tyr Pro Ser Phe  
50 55 60

Gln Asp Val His Val Met Val Phe Leu Gly Phe Gly Phe Leu Met Thr  
65 70 75 80

Phe Leu Gln Arg Tyr Gly Tyr Cys Ala Leu Gly Phe Asn Phe Leu Leu  
85 90 95

Ala Ala Leu Gly Val Gln Trp Ala Leu Leu Met Gln Gly Trp Phe Gln  
100 105 110

Tyr Thr Lys Asp Arg Leu Ile Leu Leu Gly Ile Lys Asn Leu Ile Asp  
115 120 125

Ala Asp Ser Cys Val Ala Ser Val Cys Val Ala Phe Gly Ala Val Leu  
130 135 140

Gly Lys Val Ser Pro Val Gln Met Leu Leu Met Thr Phe Phe Gln Val  
145 150 155 160

Ala Leu Phe Ser Ala Asn Glu Phe Leu Leu Leu His Val Leu Glu Val  
165 170 175

Lys Asp Ala Gly Gly Ser Ile Thr Ile His Ile Phe Gly Ala Tyr Phe  
180 185 190

Gly Leu Thr Val Thr Trp Ile Leu Tyr Arg His Asn Leu Asp His Ser  
195 200 205

Arg Glu Arg Gln Ser Ser Val Tyr His Ser Asn Leu Phe Ala Met Ile  
210 215 220

Gly	Thr	Leu	Phe	Leu	Trp	Ile	Tyr	Trp	Pro	Ser	Phe	Asn	Ser	Ala	Met	225	230	235	240
Ser	Asn	Tyr	Gly	Asp	Ala	Gln	His	Arg	Ala	Ala	Ile	Asn	Thr	Tyr	Cys	245	250	255	
Ser	Leu	Ala	Ala	Ser	Val	Leu	Thr	Ser	Val	Ala	Met	Ser	Ser	Val	Leu	260	265	270	
His	Lys	Lys	Gly	Lys	Leu	Asp	Met	Val	His	Ile	Gln	Asn	Ala	Thr	Leu	275	280	285	
Ala	Gly	Gly	Val	Gly	Val	Gly	Thr	Ala	Ala	Glu	Met	Met	Leu	Met	Pro	290	295	300	
Tyr	Gly	Ala	Leu	Ile	Val	Gly	Phe	Ile	Cys	Gly	Ala	Val	Ser	Thr	Leu	305	310	315	320
Gly	Phe	Val	Tyr	Leu	Thr	Pro	Phe	Leu	Glu	Ser	Arg	Leu	Arg	Ile	Gln	325	330	335	
Asp	Thr	Cys	Gly	Ile	His	Asn	Leu	His	Gly	Ile	Pro	Gly	Leu	Ile	Gly	340	345	350	
Ala	Ile	Val	Gly	Ala	Val	Thr	Ala	Ala	Tyr	Ala	Ser	Pro	Asp	Gly	Asp	355	360	365	
Arg	Gly	Phe	Val	Tyr	Pro	Phe	Gly	Phe	His	Asn	Glu	Lys	Asp	Glu	Lys	370	375	380	
Val	Gln	Gly	Arg	Phe	Gln	Ala	Phe	Gly	Leu	Leu	Leu	Thr	Leu	Ala	Ile	385	390	395	400
Ala	Met	Val	Gly	Gly	Thr	Ile	Met	Gly	Leu	Ile	Leu	Lys	Leu	Pro	Phe	405	410	415	
Trp	Gly	Gln	Ala	Met	Asp	Glu	Asp	Cys	Phe	Asp	Asp	Ser	Ile	Tyr	Trp	420	425	430	
Glu	Met	His	Glu	Glu	Lys	Ser	Ser	Ser	Pro	Glu	Asp	His	Thr	His	Lys	435	440	445	
Pro	Ser	Val	Pro	Thr	Glu	Pro	Val	Glu	Gln	Pro	Thr	Ser	Ser	Ala	Thr	450	455	460	
Leu	Ala	Pro														465			

<210> 248  
 <211> 488  
 <212> PRT  
 <213> Oryzias latipes

<400> 248  
 Met Gly Asn Cys Cys Glu Ser Ala Ser Asn Phe Phe Gly Pro Gln Lys  
   1                  5                  10                  15  
 Asn Thr Asn Val Arg Val Ser Leu Pro Ala Val Cys Phe Val Trp Gln  
                   20                  25                  30  
 Ile Ala Met Ile Val Leu Phe Gly Val Phe Ile Arg Tyr Asp Glu Glu  
           35                  40                  45  
 Ser Asp Ala His Trp Val Glu Leu Lys Lys Thr Glu Asn Leu Thr Asp  
   50                  55                  60  
 Leu Gln Asn Glu Phe Tyr Phe Arg Tyr Pro Ser Phe Gln Asp Val His  
   65                  70                  75                  80  
 Val Met Ile Phe Val Gly Phe Gly Phe Leu Met Thr Phe Leu Lys Arg  
                   85                  90                  95  
 Tyr Ser Phe Ser Ala Val Gly Phe Asn Phe Leu Ile Ala Ala Phe Gly  
           100                  105                  110  
 Leu Gln Trp Ala Leu Leu Met Gln Gly Trp Phe His His Phe Asp Tyr  
   115                  120                  125  
 Ser Thr Gly Lys Ile Tyr Ile Gly Ile Glu Ser Leu Ile Asn Ala Asp  
   130                  135                  140  
 Phe Cys Cys Ala Ala Ser Leu Ile Ala Tyr Gly Ala Ile Leu Gly Lys  
   145                  150                  155                  160  
 Val Ser Pro Val Gln Leu Met Val Val Thr Leu Phe Gly Val Thr Leu  
                   165                  170                  175  
 Phe Ala Val Glu Glu Tyr Ile Ile Leu Asp Leu Leu His Cys Arg Asp  
           180                  185                  190  
 Ser Gly Gly Ala Met Val Ile His Cys Phe Gly Gly Tyr Tyr Gly Leu  
   195                  200                  205  
 Ala Ile Ser Trp Val Leu Tyr Arg Pro Asn Leu His Arg Ser Lys Arg  
   210                  215                  220



Thr Ser Phe Ser Val Val Glu Ser  
485

<210> 249  
<211> 388  
<212> PRT  
<213> Homo sapiens

<400> 249  
Asn Leu Ser Asp Met Glu Asn Glu Phe Tyr Tyr Arg Tyr Pro Ser Phe  
1 5 10 15

Gln Asp Val His Val Met Val Phe Val Gly Phe Gly Phe Leu Met Thr  
20 25 30

Phe Leu Gln Arg Tyr Gly Phe Ser Ala Val Gly Phe Asn Phe Leu Leu  
35 40 45

Ala Ala Phe Gly Ile Gln Trp Ala Leu Leu Met Gln Gly Trp Phe His  
50 55 60

Phe Leu Gln Asp Arg Tyr Ile Val Val Gly Val Glu Asn Leu Ile Asn  
65 70 75 80

Ala Asp Phe Cys Val Ala Ser Val Cys Val Ala Phe Gly Ala Val Leu  
85 90 95

Gly Lys Val Ser Pro Ile Gln Leu Leu Ile Met Thr Phe Phe Gln Val  
100 105 110

Thr Leu Phe Ala Val Asn Glu Phe Ile Leu Leu Asn Leu Leu Lys Val  
115 120 125

Lys Asp Ala Gly Gly Ser Met Thr Ile His Thr Phe Gly Ala Tyr Phe  
130 135 140

Gly Leu Thr Val Thr Arg Ile Leu Tyr Arg Arg Asn Leu Glu Gln Ser  
145 150 155 160

Lys Glu Arg Gln Asn Ser Val Tyr Gln Ser Asp Leu Phe Ala Met Ile  
165 170 175

Gly Thr Leu Phe Leu Trp Met Tyr Trp Pro Ser Phe Asn Ser Ala Ile  
180 185 190

Ser Tyr His Gly Asp Ser Gln His Arg Ala Ala Ile Asn Thr Tyr Cys

195	200	205
Ser Leu Ala Ala Cys Val Leu Thr Ser Val Ala Ile Ser Ser Ala Leu		
210	215	220
His Lys Lys Gly Lys Leu Asp Met Val His Ile Gln Asn Ala Thr Leu		
225	230	235
Ala Gly Gly Val Ala Val Gly Thr Ala Ala Glu Met Met Leu Met Pro		
	245	250
		255
Tyr Gly Ala Leu Ile Ile Gly Phe Val Cys Gly Ile Ile Ser Thr Leu		
	260	265
		270
Gly Phe Val Tyr Leu Thr Pro Phe Leu Glu Ser Arg Leu His Ile Gln		
	275	280
		285
Asp Thr Cys Gly Ile Asn Asn Leu His Gly Ile Pro Gly Ile Ile Gly		
	290	295
		300
Gly Ile Val Gly Ala Val Thr Ala Ala Ser Ala Ser Leu Glu Val Tyr		
305	310	315
		320
Gly Lys Glu Gly Leu Val His Ser Phe Asp Phe Gln Gly Phe Asn Gly		
	325	330
		335
Asp Trp Thr Ala Arg Thr Gln Gly Lys Phe Gln Ile Tyr Gly Leu Leu		
	340	345
		350
Val Thr Leu Ala Met Ala Leu Met Gly Gly Ile Ile Val Gly Leu Ile		
	355	360
		365
Leu Arg Leu Pro Phe Trp Gly Gln Pro Ser Asp Glu Asn Cys Phe Glu		
	370	375
		380
Asp Ala Val Tyr		
385		

<210> 250

<211> 373

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Ammonium  
Transporter Family domain sequence

<400> 250

Gly Leu Val Arg Ser Lys Asn Val Leu Asn Ile Leu Tyr Lys Asn Phe  
1 5 10 15

Gln Asp Val Ala Ile Gly Val Leu Ala Tyr Trp Gly Phe Gly Tyr Ser  
20 25 30

Leu Ala Phe Gly Asp Ser Tyr Phe Ser Gly Phe Ile Gly Asn Leu Gly  
35 40 45

Leu Leu Ala Ala Gly Ile Gln Trp Gly Thr Leu Pro Asp Gly Leu Phe  
50 55 60

Phe Leu Phe Gln Leu Met Phe Ala Ala Thr Ala Ile Thr Ile Ile Ser  
65 70 75 80

Gly Ala Val Ala Glu Arg Ile Lys Phe Ser Ala Tyr Leu Leu Phe Ser  
85 90 95

Ala Leu Leu Gly Thr Leu Val Tyr Pro Pro Val Ala His Trp Val Trp  
100 105 110

Gly Glu Gly Gly Trp Leu Ala Lys Leu Gly Val Leu Val Asp Phe Ala  
115 120 125

Gly Ser Thr Val Val His Ile Phe Gly Gly Tyr Ala Gly Leu Ala Ala  
130 135 140

Ala Leu Val Leu Gly Pro Arg Ile Gly Arg Phe Thr Lys Asn Glu Ala  
145 150 155 160

Ile Thr Pro His Asn Leu Pro Phe Ala Val Leu Gly Thr Leu Leu Leu  
165 170 175

Trp Phe Gly Trp Phe Gly Phe Asn Ala Gly Ser Ala Leu Thr Ala Asp  
180 185 190

Gly Arg Ala Arg Ala Ala Ala Val Asn Thr Asn Leu Ala Ala Ala Gly  
195 200 205

Gly Ala Leu Thr Ala Leu Leu Ile Ser Arg Leu Lys Thr Gly Lys Pro  
210 215 220

Asn Met Leu Gly Leu Ala Asn Gly Ala Leu Ala Gly Leu Val Ala Ile  
225 230 235 240

Thr Pro Ala Cys Gly Val Val Ser Pro Trp Gly Ala Leu Ile Ile Gly  
245 250 255

Leu Ile Ala Gly Val Leu Ser Val Leu Gly Tyr Lys Leu Lys Glu Lys  
                   260                                  265                                  270

Leu Gly Ile Asp Asp Pro Leu Asp Val Phe Pro Val His Gly Val Gly  
                   275                                  280                                  285

Gly Ile Trp Gly Gly Ile Ala Val Gly Ile Phe Ala Ala Leu Tyr Val  
                   290                                  295                                  300

Asn Thr Ser Gly Ile Tyr Gly Gly Leu Leu Tyr Gly Asn Ser Lys Gln  
 305                                  310                                  315                                  320

Leu Gly Val Gln Leu Ile Gly Ile Ala Val Ile Leu Ala Tyr Ala Phe  
                                   325                                  330                                  335

Gly Val Thr Phe Ile Leu Gly Leu Leu Leu Gly Leu Thr Leu Gly Leu  
                                   340                                  345                                  350

Arg Val Ser Glu Glu Glu Glu Lys Val Gly Leu Asp Leu Ala Glu His  
                   355                                  360                                  365

Gly Glu Thr Ala Tyr  
                   370

<210> 251  
 <211> 446  
 <212> PRT  
 <213> Homo sapiens

<400> 251

Met Arg Leu Asp Glu His Asp Phe Leu Gly Gln Phe Ser Cys Ser Leu  
   1                                  5                                  10                                  15

Gly Thr Ile Val Ser Ser Lys Lys Ile Thr Arg Pro Leu Leu Leu Leu  
                   20                                  25                                  30

Asn Asp Lys Pro Ala Gly Lys Gly Leu Ile Thr Ile Ala Ala Gln Glu  
                   35                                  40                                  45

Leu Ser Asp Asn Arg Val Ile Thr Leu Ser Leu Ala Gly Arg Arg Leu  
   50                                  55                                  60

Asp Lys Lys Asp Leu Phe Gly Lys Ser Asp Pro Phe Leu Glu Phe Tyr  
   65                                  70                                  75                                  80

Lys Pro Gly Asp Asp Gly Lys Trp Met Leu Val His Arg Thr Glu Val



85

90

95

Ile Lys Tyr Thr Leu Asp Pro Val Trp Lys Pro Phe Thr Val Pro Leu  
 100 105 110

Val Ser Leu Cys Asp Gly Asp Met Glu Lys Pro Ile Gln Val Met Cys  
 115 120 125

Tyr Asp Tyr Asp Asn Asp Gly Gly His Asp Phe Ile Gly Glu Phe Gln  
 130 135 140

Thr Ser Val Ser Gln Met Cys Glu Ala Arg Asp Ser Val Pro Leu Glu  
 145 150 155 160

Phe Glu Cys Ile Asn Pro Lys Lys Gln Arg Lys Lys Lys Asn Tyr Lys  
 165 170 175

Asn Ser Gly Ile Ile Ile Leu Arg Ser Cys Lys Ile Asn Arg Asp Tyr  
 180 185 190

Ser Phe Leu Asp Tyr Ile Leu Gly Gly Cys Gln Leu Met Phe Thr Val  
 195 200 205

Gly Ile Asp Phe Thr Ala Ser Asn Gly Asn Pro Leu Asp Pro Ser Ser  
 210 215 220

Leu His Tyr Ile Asn Pro Met Gly Thr Asn Glu Tyr Leu Ser Ala Ile  
 225 230 235 240

Trp Ala Val Gly Gln Ile Ile Gln Asp Tyr Asp Ser Asp Lys Met Phe  
 245 250 255

Pro Ala Leu Gly Phe Gly Ala Gln Leu Pro Pro Asp Trp Lys Val Ser  
 260 265 270

His Glu Phe Ala Ile Asn Phe Asn Pro Thr Asn Pro Phe Cys Ser Gly  
 275 280 285

Val Asp Gly Ile Ala Gln Ala Tyr Ser Ala Cys Leu Pro His Ile Arg  
 290 295 300

Phe Tyr Gly Pro Thr Asn Phe Ser Pro Ile Val Asn His Val Ala Arg  
 305 310 315 320

Phe Ala Ala Gln Ala Thr Gln Gln Arg Thr Ala Thr Gln Tyr Phe Ile  
 325 330 335

Leu Leu Ile Ile Thr Asp Gly Val Ile Ser Asp Met Glu Glu Thr Arg



Gly Cys Gln Leu Met Phe Thr Val Gly Ile Asp Phe Thr Ala Ser Asn  
 115 120 125  
 Gly Asn Pro Leu Asp Pro Ser Ser Leu His Tyr Ile Asn Pro Met Gly  
 130 135 140  
 Thr Asn Glu Tyr Leu Ser Ala Ile Trp Ala Val Gly Gln Ile Ile Gln  
 145 150 155 160  
 Asp Tyr Asp Ser Asp Lys Met Phe Pro Ala Leu Gly Phe Gly Ala Gln  
 165 170 175  
 Leu Pro Pro Asp Trp Lys Val Ser His Glu Phe Ala Ile Asn Phe Asn  
 180 185 190  
 Pro Thr Asn Pro Phe Cys Ser Gly Val Asp Gly Ile Ala Gln Ala Tyr  
 195 200 205  
 Ser Ala Cys Leu Pro His Ile Arg Phe Tyr Gly Pro Thr Asn Phe Ser  
 210 215 220  
 Pro Ile Val Asn His Val Ala Arg Phe Ala Ala Gln Ala Thr Gln Gln  
 225 230 235 240  
 Arg Thr Ala Thr Gln Tyr Phe Ile Leu Leu Ile Ile Thr Asp Gly Val  
 245 250 255  
 Ile Ser Asp Met Glu Glu Thr Arg His Ala Val Val Gln Ala Ser Lys  
 260 265 270  
 Leu Pro Met Ser Ile Ile Ile Val Gly Val Gly Asn Ala Asp Phe Ala  
 275 280 285  
 Ala Met Glu Phe Leu Asp Gly Asp Ser Arg Met Leu Arg Ser His Thr  
 290 295 300  
 Gly Glu Glu Ala Ala Arg Asp Ile Val Gln Phe Val Pro Phe Arg Glu  
 305 310 315 320  
 Phe Arg Asn Ala Ala Lys Glu Thr Leu Ala Lys Ala Val Leu Ala Glu  
 325 330 335  
 Leu Pro Gln Gln Val Val Gln Tyr Phe Lys His Lys Asn Leu Pro Pro  
 340 345 350  
 Thr Asn Ser Glu Pro Ala  
 355

<210> 253  
 <211> 537  
 <212> PRT  
 <213> Homo sapiens

<400> 253  
 Met Ala Ala Gln Cys Val Thr Lys Val Ala Leu Asn Val Ser Cys Ala  
   1                  5                  10                  15  
  
 Asn Leu Leu Asp Lys Asp Ile Gly Ser Lys Ser Asp Pro Leu Cys Val  
                   20                  25                  30  
  
 Leu Phe Leu Asn Thr Ser Gly Gln Gln Trp Tyr Glu Val Glu Arg Thr  
           35                  40                  45  
  
 Glu Arg Ile Lys Asn Cys Leu Asn Pro Gln Phe Ser Lys Thr Phe Ile  
   50                  55                  60  
  
 Ile Asp Tyr Tyr Phe Glu Val Val Gln Lys Leu Lys Phe Gly Val Tyr  
   65                  70                  75                  80  
  
 Asp Ile Asp Asn Lys Thr Ile Glu Leu Ser Asp Asp Asp Phe Leu Gly  
                   85                  90                  95  
  
 Glu Cys Glu Cys Thr Leu Gly Gln Ile Val Ser Ser Lys Lys Leu Thr  
           100                  105                  110  
  
 Arg Pro Leu Val Met Lys Thr Gly Arg Pro Ala Gly Lys Gly Ser Ile  
           115                  120                  125  
  
 Thr Ile Ser Ala Glu Glu Ile Lys Asp Asn Arg Val Val Leu Phe Glu  
   130                  135                  140  
  
 Met Glu Ala Arg Lys Leu Asp Asn Lys Asp Leu Phe Gly Lys Ser Asp  
  145                  150                  155                  160  
  
 Pro Tyr Leu Glu Phe His Lys Gln Thr Ser Asp Gly Asn Trp Leu Met  
                   165                  170                  175  
  
 Val His Arg Thr Glu Val Val Lys Asn Asn Leu Asn Pro Val Trp Arg  
           180                  185                  190  
  
 Pro Phe Lys Ile Ser Leu Asn Ser Leu Cys Tyr Gly Asp Met Asp Lys  
   195                  200                  205  
  
 Thr Ile Lys Val Glu Cys Tyr Asp Tyr Asp Asn Asp Gly Ser His Asp  
   210                  215                  220

Leu Ile Gly Thr Phe Gln Thr Thr Met Thr Lys Leu Lys Glu Ala Ser  
 225 230 235 240  
 Arg Ser Ser Pro Val Glu Phe Glu Cys Ile Asn Glu Lys Lys Arg Gln  
 245 250 255  
 Lys Lys Lys Ser Tyr Lys Asn Ser Gly Val Ile Ser Val Lys Gln Cys  
 260 265 270  
 Glu Ile Thr Val Glu Cys Thr Phe Leu Asp Tyr Ile Met Gly Gly Cys  
 275 280 285  
 Gln Leu Asn Phe Thr Val Gly Val Asp Phe Thr Gly Ser Asn Gly Asp  
 290 295 300  
 Pro Arg Ser Pro Asp Ser Leu His Tyr Ile Ser Pro Asn Gly Val Asn  
 305 310 315 320  
 Glu Tyr Leu Thr Ala Leu Trp Ser Val Gly Leu Val Ile Gln Asp Tyr  
 325 330 335  
 Asp Ala Asp Lys Met Phe Pro Ala Phe Gly Phe Gly Ala Gln Ile Pro  
 340 345 350  
 Pro Gln Trp Gln Val Ser His Glu Phe Pro Met Asn Phe Asn Pro Ser  
 355 360 365  
 Asn Pro Tyr Cys Asn Gly Ile Gln Gly Ile Val Glu Ala Tyr Arg Ser  
 370 375 380  
 Cys Leu Pro Gln Ile Lys Leu Tyr Gly Pro Thr Asn Phe Ser Pro Ile  
 385 390 395 400  
 Ile Asn His Val Ala Arg Phe Ala Ala Ala Thr Gln Gln Gln Thr  
 405 410 415  
 Ala Ser Gln Tyr Phe Val Leu Leu Ile Ile Thr Asp Gly Val Ile Thr  
 420 425 430  
 Asp Leu Asp Glu Thr Arg Gln Ala Ile Val Asn Ala Ser Arg Leu Pro  
 435 440 445  
 Met Ser Ile Ile Ile Val Gly Val Gly Gly Ala Asp Phe Ser Ala Met  
 450 455 460  
 Glu Phe Leu Asp Gly Asp Gly Gly Ser Leu Arg Ser Pro Leu Gly Glu  
 465 470 475 480

Val Ala Ile Arg Asp Ile Val Gln Phe Val Pro Phe Arg Gln Phe Gln  
485 490 495

Asn Ala Pro Lys Glu Ala Leu Ala Gln Cys Val Leu Ala Glu Ile Pro  
500 505 510

Gln Gln Val Val Gly Tyr Phe Asn Thr Tyr Lys Leu Leu Pro Pro Lys  
515 520 525

Asn Pro Ala Thr Lys Gln Gln Lys Gln  
530 535

<210> 254

<211> 537

<212> PRT

<213> Homo sapiens

<400> 254

Met Ala His Cys Val Thr Leu Val Gln Leu Ser Ile Ser Cys Asp His  
1 5 10 15

Leu Ile Asp Lys Asp Ile Gly Ser Lys Ser Asp Pro Leu Cys Val Leu  
20 25 30

Leu Gln Asp Val Gly Gly Gly Ser Trp Ala Glu Leu Gly Arg Thr Glu  
35 40 45

Arg Val Arg Asn Cys Ser Ser Pro Glu Phe Ser Lys Thr Leu Gln Leu  
50 55 60

Glu Tyr Arg Phe Glu Thr Val Gln Lys Leu Arg Phe Gly Ile Tyr Asp  
65 70 75 80

Ile Asp Asn Lys Thr Pro Glu Leu Arg Asp Asp Asp Phe Leu Gly Gly  
85 90 95

Ala Glu Cys Ser Leu Gly Gln Ile Val Ser Ser Gln Val Leu Thr Leu  
100 105 110

Pro Leu Met Leu Lys Pro Gly Lys Pro Ala Gly Arg Gly Thr Ile Thr  
115 120 125

Val Ser Ala Gln Glu Leu Lys Asp Asn Arg Val Val Thr Met Glu Val  
130 135 140

Glu Ala Arg Asn Leu Asp Lys Lys Asp Phe Leu Gly Lys Ser Asp Pro

145		150		155		160									
Phe	Leu	Glu	Phe	Phe	Arg	Gln	Gly	Asp	Gly	Lys	Trp	His	Leu	Val	Tyr
			165						170					175	
Arg	Ser	Glu	Val	Ile	Lys	Asn	Asn	Leu	Asn	Pro	Thr	Trp	Lys	Arg	Phe
			180					185					190		
Ser	Val	Pro	Val	Gln	His	Phe	Cys	Gly	Gly	Asn	Pro	Ser	Thr	Pro	Ile
		195					200					205			
Gln	Val	Gln	Cys	Ser	Asp	Tyr	Asp	Ser	Asp	Gly	Ser	His	Asp	Leu	Ile
	210					215					220				
Gly	Thr	Phe	His	Thr	Ser	Leu	Ala	Gln	Leu	Gln	Ala	Val	Pro	Ala	Glu
225					230					235					240
Phe	Glu	Cys	Ile	His	Pro	Glu	Lys	Gln	Gln	Lys	Lys	Lys	Ser	Tyr	Lys
			245					250						255	
Asn	Ser	Gly	Thr	Ile	Arg	Val	Lys	Ile	Cys	Arg	Val	Glu	Thr	Glu	Tyr
			260					265					270		
Ser	Phe	Leu	Asp	Tyr	Val	Met	Gly	Gly	Cys	Gln	Ile	Asn	Phe	Thr	Val
		275					280					285			
Gly	Val	Asp	Phe	Thr	Gly	Ser	Asn	Gly	Asp	Pro	Ser	Ser	Pro	Asp	Ser
	290					295					300				
Leu	His	Tyr	Leu	Ser	Pro	Thr	Gly	Val	Asn	Glu	Tyr	Leu	Met	Ala	Leu
305				310					315						320
Trp	Ser	Val	Gly	Ser	Val	Val	Gln	Asp	Tyr	Asp	Ser	Asp	Lys	Leu	Phe
			325					330						335	
Pro	Ala	Phe	Gly	Phe	Gly	Ala	Gln	Val	Pro	Pro	Asp	Trp	Gln	Val	Ser
		340					345						350		
His	Glu	Phe	Ala	Leu	Asn	Phe	Asn	Pro	Ser	Asn	Pro	Tyr	Cys	Ala	Gly
		355				360						365			
Ile	Gln	Gly	Ile	Val	Asp	Ala	Tyr	Arg	Gln	Ala	Leu	Pro	Gln	Val	Arg
	370					375					380				
Leu	Tyr	Gly	Pro	Thr	Asn	Phe	Ala	Pro	Ile	Ile	Asn	His	Val	Ala	Arg
385				390						395					400
Phe	Ala	Ala	Gln	Ala	Ala	His	Gln	Gly	Thr	Ala	Ser	Gln	Tyr	Phe	Met

405 410 415  
 Leu Leu Leu Leu Thr Asp Gly Ala Val Thr Asp Val Glu Ala Thr Arg  
 420 425 430  
 Glu Ala Val Val Arg Ala Ser Asn Leu Pro Met Ser Val Ile Ile Val  
 435 440 445  
 Gly Val Gly Gly Ala Asp Phe Glu Ala Met Glu Gln Leu Asp Ala Asp  
 450 455 460  
 Gly Gly Pro Leu His Thr Arg Ser Gly Gln Ala Ala Ala Arg Asp Ile  
 465 470 475 480  
 Val Gln Phe Val Pro Tyr Arg Arg Phe Gln Asn Ala Pro Arg Glu Ala  
 485 490 495  
 Leu Ala Gln Thr Val Leu Ala Glu Val Pro Thr Gln Leu Val Ser Tyr  
 500 505 510  
 Phe Arg Ala Gln Gly Trp Ala Pro Leu Lys Pro Leu Pro Pro Ser Ala  
 515 520 525  
 Lys Asp Pro Ala Gln Ala Pro Gln Ala  
 530 535  
  
 <210> 255  
 <211> 454  
 <212> PRT  
 <213> Mus musculus  
  
 <400> 255  
 Met Ala His Cys Val Thr Leu Val Gln Leu Ser Val Ser Cys Glu His  
 1 5 10 15  
 Leu Ile Asp Lys Asp Ile Gly Ser Lys Ser Asp Pro Leu Cys Val Leu  
 20 25 30  
 Leu Gln Asp Val Gly Gly Ala Trp Ala Glu Leu Cys Arg Thr Glu Arg  
 35 40 45  
 Val Arg Asn Cys Ser Ser Pro Glu Phe Ser Lys Thr Leu Gln Ile Glu  
 50 55 60  
 Tyr His Phe Glu Thr Val Gln Lys Leu Arg Phe Gly Ile Tyr Asp Ile  
 65 70 75 80



Asp	Asn	Lys	Thr	Pro	Glu	Leu	Gly	Asp	Asp	Asp	Phe	Leu	Gly	Gly	Ala	85	90	95	
Glu	Cys	Ser	Leu	Gly	Gln	Ile	Val	Ser	Ser	Gln	Thr	Leu	Thr	Leu	Pro	100	105	110	
Leu	Met	Leu	Lys	Pro	Gly	Lys	Pro	Ala	Gly	Arg	Gly	Thr	Ile	Thr	Val	115	120	125	
Ser	Ala	Gln	Glu	Leu	Lys	Asp	Ser	Arg	Val	Val	Thr	Met	Glu	Val	Glu	130	135	140	
Ala	Arg	Asn	Leu	Asp	Lys	Lys	Asp	Phe	Leu	Gly	Lys	Ser	Asp	Pro	Phe	145	150	155	160
Leu	Glu	Phe	Phe	Arg	Gln	Gly	Asp	Gly	Lys	Trp	Gln	Leu	Ala	Tyr	Arg	165	170	175	
Thr	Glu	Val	Val	Lys	Asn	Asn	Leu	Asn	Pro	Thr	Trp	Lys	Arg	Phe	Ser	180	185	190	
Val	Ser	Leu	Gln	His	Phe	Cys	Gly	Gly	Asp	Leu	Ser	Thr	Pro	Ile	Gln	195	200	205	
Val	Arg	Cys	Ser	Asp	Tyr	Asp	Ser	Asp	Gly	Ser	His	Asp	Leu	Ile	Gly	210	215	220	
Thr	Phe	His	Thr	Thr	Leu	Ala	Gln	Leu	Gln	Ala	Val	Pro	Ala	Glu	Phe	225	230	235	240
Glu	Cys	Val	His	Pro	Glu	Lys	Gln	Gln	Arg	Lys	Lys	Asn	Tyr	Arg	Asn	245	250	255	
Ser	Gly	Thr	Val	Arg	Val	Lys	Thr	Cys	Arg	Val	Glu	Thr	Glu	Tyr	Ser	260	265	270	
Phe	Leu	Asp	Tyr	Val	Met	Gly	Gly	Cys	Gln	Ile	Asn	Phe	Thr	Val	Gly	275	280	285	
Val	Asp	Phe	Thr	Gly	Ser	Asn	Gly	Asp	Pro	Ser	Ser	Pro	Asp	Ser	Leu	290	295	300	
His	Tyr	Leu	Ser	Pro	Thr	Gly	Val	Asn	Glu	Tyr	Leu	Thr	Ala	Leu	Trp	305	310	315	320
Ser	Val	Gly	Ser	Val	Val	Gln	Asp	Tyr	Asp	Ser	Asp	Lys	Leu	Phe	Pro	325	330	335	

Ala Phe Gly Phe Gly Ala Gln Val Pro Pro Asp Trp Gln Val Ser His  
 340 345 350

Glu Phe Ala Leu Asn Phe Asn Pro Ser Asn Pro Tyr Cys Ala Gly Ile  
 355 360 365

Gln Gly Ile Val Asp Ala Tyr Arg Gln Ala Leu Pro Gln Val Arg Leu  
 370 375 380

Tyr Gly Pro Thr Asn Phe Ala Pro Ile Ile Asn His Val Ala Arg Phe  
 385 390 395 400

Ala Ala Gln Ala Ala Gln Gln Arg Ser Ala Ser Gln Tyr Phe Val Leu  
 405 410 415

Leu Leu Leu Thr Asp Gly Ala Val Thr Asp Val Glu Ala Thr Cys Lys  
 420 425 430

Ala Val Val Asp Ala Ser Lys Leu Pro Met Ser Val Ile Ile Val Gly  
 435 440 445

Val Gly Gly Gly His Ser  
 450

<210> 256

<211> 94

<212> PRT

<213> Homo sapiens

<400> 256

Leu Ala Gly Arg Arg Leu Asp Lys Lys Asp Leu Phe Gly Lys Ser Asp  
 1 5 10 15

Pro Phe Leu Glu Phe Tyr Lys Pro Gly Asp Asp Gly Lys Trp Met Leu  
 20 25 30

Val His Arg Thr Glu Val Ile Lys Tyr Thr Leu Asp Pro Val Trp Lys  
 35 40 45

Pro Phe Thr Val Pro Leu Val Ser Leu Cys Asp Gly Asp Met Glu Lys  
 50 55 60

Pro Ile Gln Val Met Cys Tyr Asp Tyr Asp Asn Asp Gly Gly His Asp  
 65 70 75 80

Phe Ile Gly Glu Phe Gln Thr Ser Val Ser Gln Met Cys Glu  
 85 90

<210> 257  
<211> 88  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Protein kinase  
C conserved region 2 domain sequence

<400> 257  
Ile Ser Ala Arg Asn Leu Pro Pro Lys Asp Lys Gly Gly Lys Ser Asp  
1 5 10 15  
Pro Tyr Val Lys Val Ser Leu Asp Gly Asp Pro Arg Glu Lys Lys Lys  
20 25 30  
Thr Lys Val Val Lys Asn Thr Leu Asn Pro Val Trp Asn Glu Thr Phe  
35 40 45  
Glu Phe Glu Val Pro Pro Pro Glu Leu Ser Glu Leu Glu Ile Glu Val  
50 55 60  
Tyr Asp Lys Asp Arg Phe Ser Arg Asp Asp Phe Ile Gly Arg Val Thr  
65 70 75 80  
Ile Pro Leu Ser Asp Leu Leu Leu  
85

<210> 258  
<211> 100  
<212> PRT  
<213> Homo sapiens

<400> 258  
Val Ser Gly Gln Asn Leu Leu Asp Arg Asp Val Thr Ser Lys Ser Asp  
1 5 10 15  
Pro Phe Cys Val Leu Phe Thr Glu Asn Asn Gly Arg Trp Ile Glu Tyr  
20 25 30  
Asp Arg Thr Glu Thr Ala Ile Asn Asn Leu Asn Pro Ala Phe Ser Lys  
35 40 45  
Lys Phe Val Leu Asp Tyr His Phe Glu Glu Val Gln Lys Leu Lys Phe  
50 55 60

Ala Leu Phe Asp Gln Asp Lys Ser Ser Met Arg Leu Asp Glu His Asp  
65 70 75 80

Phe Leu Gly Gln Phe Ser Cys Ser Leu Gly Thr Ile Val Ser Ser Lys  
85 90 95

Lys Ile Thr Arg  
100

<210> 259

<211> 94

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Protein kinase  
C conserved region 2 domain sequence

<400> 259

Ile Ser Ala Arg Asn Leu Pro Pro Lys Asp Lys Gly Gly Lys Ser Asp  
1 5 10 15

Pro Tyr Val Lys Val Ser Leu Asp Gly Asp Pro Arg Glu Lys Lys Lys  
20 25 30

Thr Lys Val Val Lys Asn Thr Leu Asn Pro Val Trp Asn Glu Thr Phe  
35 40 45

Glu Phe Glu Val Pro Pro Pro Glu Leu Ser Glu Leu Glu Ile Glu Val  
50 55 60

Tyr Asp Lys Asp Arg Phe Ser Arg Asp Asp Phe Ile Gly Arg Val Thr  
65 70 75 80

Ile Pro Leu Ser Asp Leu Leu Leu Gly Gly Arg His Glu Lys  
85 90

<210> 260

<211> 85

<212> PRT

<213> Homo sapiens

<400> 260

Val Ser Gly Gln Asn Leu Leu Asp Arg Asp Val Thr Ser Lys Ser Asp  
1 5 10 15

Pro Phe Cys Val Leu Phe Thr Glu Asn Asn Gly Arg Trp Ile Glu Tyr  
                   20                                  25                                  30  
 Asp Arg Thr Glu Thr Ala Ile Asn Asn Leu Asn Pro Ala Phe Ser Lys  
                   35                                  40                                  45  
 Lys Phe Val Leu Asp Tyr His Phe Glu Glu Val Gln Lys Leu Lys Phe  
                   50                                  55                                  60  
 Ala Leu Phe Asp Gln Asp Lys Ser Ser Met Arg Leu Asp Glu His Asp  
                   65                                  70                                  75                                  80  
 Phe Leu Gly Gln Phe  
                                   85

<210> 261  
 <211> 82  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: C2 domain  
                   sequence

<400> 261  
 Ile Ser Ala Arg Asn Leu Pro Lys Met Asp Met Asn Gly Leu Ser Asp  
   1                                  5                                  10                                  15  
 Pro Tyr Val Lys Val Asp Leu Asp Gly Asp Pro Lys Asp Thr Lys Lys  
                   20                                  25                                  30  
 Phe Lys Thr Lys Thr Val Lys Lys Thr Leu Asn Pro Val Trp Asn Glu  
                   35                                  40                                  45  
 Thr Phe Val Phe Glu Lys Val Pro Leu Pro Asp Leu Ala Ser Leu Arg  
                   50                                  55                                  60  
 Phe Ala Val Tyr Asp Glu Asp Arg Phe Ser Arg Asp Asp Phe Ile Gly  
                   65                                  70                                  75                                  80  
 Gln Val

<210> 262  
 <211> 85

<212> PRT

<213> Homo sapiens

<400> 262

Leu Ala Gly Arg Arg Leu Asp Lys Lys Asp Leu Phe Gly Lys Ser Asp  
1 5 10 15

Pro Phe Leu Glu Phe Tyr Lys Pro Gly Asp Asp Gly Lys Trp Met Leu  
20 25 30

Val His Arg Thr Glu Val Ile Lys Tyr Thr Leu Asp Pro Val Trp Lys  
35 40 45

Pro Phe Thr Val Pro Leu Val Ser Leu Cys Asp Gly Asp Met Glu Lys  
50 55 60

Pro Ile Gln Val Met Cys Tyr Asp Tyr Asp Asn Asp Gly Gly His Asp  
65 70 75 80

Phe Ile Gly Glu Phe  
85

<210> 263

<211> 82

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: C2 domain  
sequence

<400> 263

Ile Ser Ala Arg Asn Leu Pro Lys Met Asp Met Asn Gly Leu Ser Asp  
1 5 10 15

Pro Tyr Val Lys Val Asp Leu Asp Gly Asp Pro Lys Asp Thr Lys Lys  
20 25 30

Phe Lys Thr Lys Thr Val Lys Lys Thr Leu Asn Pro Val Trp Asn Glu  
35 40 45

Thr Phe Val Phe Glu Lys Val Pro Leu Pro Asp Leu Ala Ser Leu Arg  
50 55 60

Phe Ala Val Tyr Asp Glu Asp Arg Phe Ser Arg Asp Asp Phe Ile Gly  
65 70 75 80

Gln Val

<210> 264

<211> 174

<212> PRT

<213> Homo sapiens

<400> 264

Met Gly Thr Asn Glu Tyr Leu Ser Ala Ile Trp Ala Val Gly Gln Ile  
1 5 10 15  
Ile Gln Asp Tyr Asp Ser Asp Lys Met Phe Pro Ala Leu Gly Phe Gly  
20 25 30  
Ala Gln Leu Pro Pro Asp Trp Lys Val Ser His Glu Phe Ala Ile Asn  
35 40 45  
Phe Asn Pro Thr Asn Pro Phe Cys Ser Gly Val Asp Gly Ile Ala Gln  
50 55 60  
Ala Tyr Ser Ala Cys Leu Pro His Ile Arg Phe Tyr Gly Pro Thr Asn  
65 70 75 80  
Phe Ser Pro Ile Val Asn His Val Ala Arg Phe Ala Ala Gln Ala Thr  
85 90 95  
Gln Gln Arg Thr Ala Thr Gln Tyr Phe Ile Leu Leu Ile Ile Thr Asp  
100 105 110  
Gly Val Ile Ser Asp Met Glu Glu Thr Arg His Ala Val Val Gln Ala  
115 120 125  
Ser Lys Leu Pro Met Ser Ile Ile Ile Val Gly Val Gly Asn Ala Asp  
130 135 140  
Phe Ala Ala Met Glu Phe Leu Asp Gly Asp Ser Arg Met Leu Arg Ser  
145 150 155 160  
His Thr Gly Glu Glu Ala Ala Arg Asp Ile Val Gln Phe Val  
165 170

<210> 265

<211> 166

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: von Willebrand  
factor (vWF) type A domain sequence

<400> 265

Met Gly Gly Asn Arg Phe Glu Leu Ala Lys Glu Phe Val Leu Lys Leu  
1 5 10 15  
Val Glu Gln Leu Asp Ile Gly Pro Asp Gly Asp Arg Val Gly Leu Val  
20 25 30  
Thr Phe Ser Ser Asp Ala Arg Val Leu Phe Pro Leu Asn Asp Ser Gln  
35 40 45  
Ser Lys Asp Ala Leu Leu Glu Ala Leu Ala Ser Leu Ser Tyr Ser Leu  
50 55 60  
Gly Gly Gly Thr Asn Leu Gly Ala Ala Leu Glu Tyr Ala Leu Glu Asn  
65 70 75 80  
Leu Phe Ser Glu Ser Ala Gly Ser Arg Arg Gly Ala Pro Lys Val Leu  
85 90 95  
Ile Leu Ile Thr Asp Gly Glu Ser Asn Asp Gly Gly Glu Asp Ile Leu  
100 105 110  
Lys Ala Ala Lys Glu Leu Lys Arg Ser Gly Val Lys Val Phe Val Val  
115 120 125  
Gly Val Gly Asn Asp Val Asp Glu Glu Glu Leu Lys Lys Leu Ala Ser  
130 135 140  
Ala Pro Gly Gly Val Phe Val Val Glu Asp Leu Pro Ser Leu Leu Asp  
145 150 155 160  
Leu Leu Ile Asp Leu Leu  
165

<210> 266

<211> 416

<212> PRT

<213> Homo sapiens

<400> 266

Met Leu Ala Leu Leu Val Leu Val Thr Val Ala Leu Ala Ser Ala His  
1 5 10 15



His Gly Gly Glu His Phe Glu Gly Glu Lys Val Phe Arg Val Asn Val  
 20 25 30  
 Glu Asp Glu Asn His Ile Asn Ile Ile Arg Glu Leu Ala Ser Thr Thr  
 35 40 45  
 Gln Ile Asp Phe Trp Lys Pro Asp Ser Val Thr Gln Ile Lys Pro His  
 50 55 60  
 Ser Thr Val Asp Phe Arg Val Lys Ala Glu Asp Thr Val Thr Val Glu  
 65 70 75 80  
 Asn Val Leu Lys Gln Asn Glu Leu Gln Tyr Lys Val Leu Ile Ser Asn  
 85 90 95  
 Leu Arg Asn Val Val Glu Ala Gln Phe Asp Ser Arg Val Arg Ala Thr  
 100 105 110  
 Gly His Ser Tyr Glu Lys Tyr Asn Lys Trp Glu Thr Ile Glu Ala Trp  
 115 120 125  
 Thr Gln Gln Val Ala Thr Glu Asn Pro Ala Leu Ile Ser Arg Ser Val  
 130 135 140  
 Ile Gly Thr Thr Phe Glu Gly Arg Ala Ile Tyr Leu Leu Lys Val Gly  
 145 150 155 160  
 Lys Ala Gly Gln Asn Lys Pro Ala Ile Phe Met Asp Cys Gly Phe His  
 165 170 175  
 Ala Arg Glu Trp Ile Ser Pro Ala Phe Cys Gln Trp Phe Val Arg Glu  
 180 185 190  
 Ala Val Arg Thr Tyr Gly Arg Glu Ile Gln Val Thr Glu Leu Leu Asp  
 195 200 205  
 Lys Leu Asp Phe Tyr Val Leu Pro Val Leu Asn Ile Asp Gly Tyr Ile  
 210 215 220  
 Tyr Thr Trp Thr Lys Ser Arg Phe Trp Arg Lys Thr Arg Ser Thr His  
 225 230 235 240  
 Thr Gly Ser Ser Ile Gly Thr Asp Pro Asn Arg Asn Phe Asp Ala Gly  
 245 250 255  
 Trp Cys Glu Ile Gly Ala Ser Arg Asn Pro Cys Asp Glu Thr Tyr Cys  
 260 265 270

Gly Pro Ala Ala Glu Ser Glu Lys Glu Thr Lys Ala Leu Ala Asp Phe  
 275 280 285  
 Ile Arg Asn Lys Leu Ser Ser Ile Lys Ala Tyr Leu Thr Ile His Ser  
 290 295 300  
 Tyr Ser Gln Met Met Ile Tyr Pro Tyr Ser Tyr Ala Tyr Lys Leu Gly  
 305 310 315 320  
 Glu Asn Asn Ala Glu Leu Asn Ala Leu Ala Lys Ala Thr Val Lys Glu  
 325 330 335  
 Leu Ala Ser Leu His Gly Thr Lys Tyr Thr Tyr Gly Pro Gly Ala Thr  
 340 345 350  
 Thr Ile Tyr Pro Ala Ala Gly Gly Ser Asp Asp Trp Ala Tyr Asp Gln  
 355 360 365  
 Gly Ile Arg Tyr Ser Phe Thr Phe Glu Leu Arg Asp Thr Gly Arg Tyr  
 370 375 380  
 Gly Phe Leu Leu Pro Glu Ser Gln Ile Arg Ala Thr Cys Glu Glu Thr  
 385 390 395 400  
 Phe Leu Ala Ile Lys Tyr Val Ala Ser Tyr Val Leu Glu His Leu Tyr  
 405 410 415

<210> 267  
 <211> 417  
 <212> PRT  
 <213> Homo sapiens

<400> 267  
 Met Leu Ala Leu Leu Val Leu Val Thr Val Ala Leu Ala Ser Ala His  
 1 5 10 15  
 His Gly Gly Glu His Phe Glu Gly Glu Lys Val Phe Arg Val Asn Val  
 20 25 30  
 Glu Asp Glu Asn His Ile Asn Ile Ile Arg Glu Leu Ala Ser Thr Thr  
 35 40 45  
 Gln Ile Asp Phe Trp Lys Pro Asp Ser Val Thr Gln Ile Lys Pro His



305                      310                      315                      320  
 Gly Glu Asn Asn Ala Glu Leu Asn Ala Leu Ala Lys Ala Thr Val Lys  
                                  325                      330                      335  
 Glu Leu Ala Ser Leu His Gly Thr Lys Tyr Thr Tyr Gly Pro Gly Ala  
                                  340                      345                      350  
 Thr Thr Ile Tyr Pro Ala Ala Gly Gly Ser Asp Asp Trp Ala Tyr Asp  
                                  355                      360                      365  
 Gln Gly Ile Arg Tyr Ser Phe Thr Phe Glu Leu Arg Asp Thr Gly Arg  
                                  370                      375                      380  
 Tyr Gly Phe Leu Leu Pro Glu Ser Gln Ile Arg Ala Thr Cys Glu Glu  
 385                      390                      395                      400  
 Thr Phe Leu Ala Ile Lys Tyr Val Ala Ser Tyr Val Leu Glu His Leu  
                                  405                      410                      415

Tyr

<210> 268  
 <211> 417  
 <212> PRT  
 <213> Homo sapiens

<400> 268  
 Met Leu Ala Leu Leu Val Leu Val Thr Val Ala Leu Ala Ser Ala His  
 1                      5                      10                      15  
 His Gly Gly Glu His Phe Glu Gly Glu Lys Val Phe Arg Val Asn Val  
                                  20                      25                      30  
 Glu Asp Glu Asn His Ile Asn Ile Ile Arg Glu Leu Ala Ser Thr Thr  
                                  35                      40                      45  
 Gln Ile Asp Phe Trp Lys Pro Asp Ser Val Thr Gln Ile Lys Pro His  
                                  50                      55                      60  
 Ser Thr Val Asp Phe Arg Val Lys Ala Glu Asp Thr Val Thr Val Glu  
 65                      70                      75                      80  
 Asn Val Leu Lys Gln Asn Glu Leu Gln Tyr Lys Val Leu Ile Ser Asn  
                                  85                      90                      95

Leu Arg Asn Val Val Glu Ala Gln Phe Asp Ser Arg Val Arg Ala Thr  
 100 105 110  
 Gly His Ser Tyr Glu Lys Tyr Asn Lys Trp Glu Thr Ile Glu Ala Trp  
 115 120 125  
 Thr Gln Gln Val Ala Thr Glu Asn Pro Ala Leu Ile Ser Arg Ser Val  
 130 135 140  
 Ile Gly Thr Thr Phe Glu Gly Arg Ala Ile Tyr Leu Leu Lys Val Gly  
 145 150 155 160  
 Lys Ala Gly Gln Asn Lys Pro Ala Ile Phe Met Asp Cys Gly Phe His  
 165 170 175  
 Ala Arg Glu Trp Ile Ser Pro Ala Phe Cys Gln Trp Phe Val Arg Glu  
 180 185 190  
 Ala Val Arg Thr Tyr Gly Arg Glu Ile Gln Val Thr Glu Leu Leu Asn  
 195 200 205  
 Lys Leu Asp Phe Tyr Val Leu Pro Val Leu Asn Ile Asp Gly Tyr Ile  
 210 215 220  
 Tyr Thr Trp Thr Lys Ser Arg Phe Trp Arg Lys Thr Arg Ser Thr His  
 225 230 235 240  
 Thr Gly Ser Ser Cys Ile Gly Thr Asp Pro Asn Arg Asn Phe Asp Ala  
 245 250 255  
 Gly Trp Cys Glu Ile Gly Ala Ser Arg Asn Pro Cys Asp Glu Thr Tyr  
 260 265 270  
 Cys Gly Pro Ala Ala Glu Ser Glu Lys Glu Thr Lys Ala Leu Ala Asp  
 275 280 285  
 Phe Ile Arg Asn Lys Leu Ser Ser Ile Lys Ala Tyr Leu Thr Ile His  
 290 295 300  
 Ser Tyr Ser Gln Met Met Ile Tyr Pro Tyr Ser Tyr Ala Tyr Lys Leu  
 305 310 315 320  
 Gly Glu Asn Asn Ala Glu Leu Asn Ala Leu Ala Lys Ala Thr Val Lys  
 325 330 335  
 Glu Leu Ala Ser Leu His Gly Thr Lys Tyr Thr Tyr Gly Pro Gly Ala  
 340 345 350

Thr Thr Ile Tyr Pro Ala Ala Gly Gly Ser Asp Asp Trp Ala Tyr Asp  
355 360 365

Gln Gly Ile Arg Tyr Ser Phe Thr Phe Glu Leu Arg Asp Thr Gly Arg  
370 375 380

Tyr Gly Phe Leu Leu Pro Glu Ser Gln Ile Arg Ala Thr Cys Glu Glu  
385 390 395 400

Thr Phe Leu Ala Ile Lys Tyr Val Ala Ser Tyr Val Leu Glu His Leu  
405 410 415

Tyr

<210> 269

<211> 416

<212> PRT

<213> Sus scrofa

<400> 269

Met Leu Ala Phe Leu Ile Leu Val Thr Val Thr Leu Ala Ser Ala His  
1 5 10 15

His Ser Gly Glu His Phe Glu Gly Glu Lys Val Phe Arg Val Asn Val  
20 25 30

Glu Asp Glu Asn Asp Ile Ser Leu Leu His Glu Leu Ala Ser Thr Arg  
35 40 45

Gln Ile Asp Phe Trp Lys Pro Asp Ser Val Thr Gln Ile Lys Pro His  
50 55 60

Ser Thr Val Asp Phe Arg Val Lys Ala Glu Asp Ile Leu Ala Val Glu  
65 70 75 80

Asp Phe Leu Glu Gln Asn Glu Leu Gln Tyr Glu Val Leu Ile Asn Asn  
85 90 95

Leu Arg Ser Val Leu Glu Ala Gln Phe Asp Ser Arg Val Arg Thr Thr  
100 105 110

Gly His Ser Tyr Glu Lys Tyr Asn Asn Trp Glu Thr Ile Glu Ala Trp  
115 120 125

Thr Lys Gln Val Thr Ser Glu Asn Pro Asp Leu Ile Ser Arg Thr Ala  
130 135 140

Ile Gly Thr Thr Phe Leu Gly Asn Asn Ile Tyr Leu Leu Lys Val Gly  
 145 150 155 160  
 Lys Pro Gly Pro Asn Lys Pro Ala Ile Phe Met Asp Cys Gly Phe His  
 165 170 175  
 Ala Arg Glu Trp Ile Ser His Ala Phe Cys Gln Trp Phe Val Arg Glu  
 180 185 190  
 Ala Val Leu Thr Tyr Gly Tyr Glu Ser His Met Thr Glu Phe Leu Asn  
 195 200 205  
 Lys Leu Asp Phe Tyr Val Leu Pro Val Leu Asn Ile Asp Gly Tyr Ile  
 210 215 220  
 Tyr Thr Trp Thr Lys Asn Arg Met Trp Arg Lys Thr Arg Ser Thr Asn  
 225 230 235 240  
 Ala Gly Thr Thr Cys Ile Gly Thr Asp Pro Asn Arg Asn Phe Asp Ala  
 245 250 255  
 Gly Trp Cys Thr Thr Gly Ala Ser Thr Asp Pro Cys Asp Glu Thr Tyr  
 260 265 270  
 Cys Gly Ser Ala Ala Glu Ser Glu Lys Glu Thr Lys Ala Leu Ala Asp  
 275 280 285  
 Phe Ile Arg Asn Asn Leu Ser Ser Ile Lys Ala Tyr Leu Thr Ile His  
 290 295 300  
 Ser Tyr Ser Gln Met Ile Leu Tyr Pro Tyr Ser Tyr Asp Tyr Lys Leu  
 305 310 315 320  
 Pro Glu Asn Asn Ala Glu Leu Asn Asn Leu Ala Lys Ala Ala Val Lys  
 325 330 335  
 Glu Leu Ala Thr Leu Tyr Gly Thr Lys Tyr Thr Tyr Gly Pro Gly Ala  
 340 345 350  
 Thr Thr Ile Tyr Pro Ala Ala Gly Gly Ser Asp Asp Trp Ala Tyr Asp  
 355 360 365  
 Gln Gly Ile Lys Tyr Ser Phe Thr Phe Glu Leu Arg Asp Lys Gly Arg  
 370 375 380  
 Tyr Gly Phe Ile Leu Pro Glu Ser Gln Ile Gln Ala Thr Cys Glu Glu  
 385 390 395 400

Thr Met Leu Ala Ile Lys Tyr Val Thr Asn Tyr Val Leu Gly His Leu  
 405 410 415

<210> 270  
 <211> 416  
 <212> PRT  
 <213> Canis familiaris

<220>  
 <221> VARIANT  
 <222> (192)  
 <223> Where Xaa is Val, Ala, Asp or Gly

<400> 270  
 Met Ala Phe Leu Ile Leu Val Thr Leu Ala Leu Ala Ser Ala His Tyr  
 1 5 10 15  
 Ser Gly Glu His Phe Glu Gly Glu Lys Val Phe Arg Val Asn Val Glu  
 20 25 30  
 Asp Glu Asn His Ile Asn Leu Leu His Thr Leu Ala Ser Thr Thr Gln  
 35 40 45  
 Ile Asp Phe Trp Lys Pro Asp Ser Val Thr Gln Ile Lys Pro His Ser  
 50 55 60  
 Thr Ala Asp Phe Arg Val Lys Ala Glu Asp Ile Leu Thr Val Glu Asp  
 65 70 75 80  
 Phe Leu Lys Gln Asn Glu Leu His Tyr Glu Val Leu Ile Asn Asn Leu  
 85 90 95  
 Arg Leu Val Leu Glu Gly Gln Phe Gly Arg Gln Val Pro Ala Thr Gly  
 100 105 110  
 His Ser Tyr Glu Lys Tyr Asn Arg Trp Glu Thr Ile Glu Ala Trp Thr  
 115 120 125  
 Gln Gln Val Thr Ser Glu Asn Pro Asp Leu Ile Ser Arg Arg Ser Ile  
 130 135 140  
 Gly Thr Thr Phe Glu Gly Arg Thr Ile Tyr Leu Leu Lys Val Gly Lys  
 145 150 155 160



Ala Gly Gln Asn Lys Pro Ala Ile Phe Met Asp Cys Gly Phe His Ala  
 165 170 175  
 Arg Glu Trp Ile Ser Pro Ala Phe Trp Gln Trp Phe Val Arg Glu Xaa  
 180 185 190  
 Ile Arg Thr Tyr Gly Gln Glu Ile His Met Thr Glu Leu Leu Asp Lys  
 195 200 205  
 Leu Asp Phe Tyr Val Leu Pro Val Gly Asn Ile Asp Gly Tyr Val Tyr  
 210 215 220  
 Thr Trp Thr Lys Asn Arg Met Trp Arg Lys Thr Arg Ser Thr Gln Val  
 225 230 235 240  
 Gly Thr Asn Cys Val Gly Thr Asp Pro Thr Arg Asn Phe Asp Ala Gly  
 245 250 255  
 Trp Cys Lys Ile Gly Ala Ser Arg Asn Pro Cys Asp Glu Thr Tyr Cys  
 260 265 270  
 Gly Pro Ala Ala Glu Ser Glu Lys Glu Thr Lys Ala Leu Ala Asn Phe  
 275 280 285  
 Ile Arg Ser Asn Leu Ser Ser Ile Lys Ala Tyr Leu Thr Ile His Ser  
 290 295 300  
 Tyr Ser Gln Met Met Leu Tyr Pro Tyr Ser Tyr Asp Tyr Lys Leu Thr  
 305 310 315 320  
 Glu Asn Asn Ala Glu Leu Asn Ala Leu Ala Lys Ala Thr Val Lys Glu  
 325 330 335  
 Leu Ala Thr Leu His Gly Thr Lys Tyr Thr Tyr Gly Pro Gly Ala Thr  
 340 345 350  
 Thr Ile Tyr Pro Ala Ala Gly Gly Ser Asp Asp Trp Ala Tyr Asp Gln  
 355 360 365  
 Gly Ile Lys Tyr Ser Phe Thr Phe Glu Leu Arg Asp Lys Gly Arg Tyr  
 370 375 380  
 Gly Phe Ala Leu Pro Glu Ser Gln Ile Ser Pro Thr Cys Glu Glu Thr  
 385 390 395 400  
 Leu Leu Ala Ile Lys His Leu Ala Arg Tyr Val Leu Gln His Leu Tyr  
 405 410 415

<210> 271  
<211> 82  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:Propep\_M14  
domain sequence

<400> 271  
Gln Val Leu Arg Val Lys Val Ala Asp Glu Asp Gln Val Lys Leu Leu  
1 5 10 15  
Lys Asp Leu Glu Asn Thr Glu His Leu Glu Leu Asp Phe Trp Lys Pro  
20 25 30  
Asp Ser Ala Thr Pro Ile Lys Pro Gly Ser Thr Val Asp Phe Arg Val  
35 40 45  
Pro Ala Glu Asp Ile Gln Ala Val Lys Ser Phe Leu Glu Gln Ser Gly  
50 55 60  
Ile His Tyr Glu Val Leu Ile Glu Asp Val Gln Glu Leu Leu Glu Glu  
65 70 75 80  
Gln Phe

<210> 272  
<211> 80  
<212> PRT  
<213> Homo sapiens

<400> 272  
Lys Val Phe Arg Val Asn Val Glu Asp Glu Asn His Ile Asn Ile Ile  
1 5 10 15  
Arg Glu Leu Ala Thr Phe Ile Gln Ile Asp Phe Trp Lys Pro Asp Ser  
20 25 30  
Val Thr Gln Ile Lys Pro His Ser Thr Val Asp Phe Arg Val Lys Ala  
35 40 45

Glu Asp Thr Val Thr Val Glu Asn Val Leu Lys Gln Asn Glu Leu Gln  
50 55 60

Tyr Lys Val Leu Ile Ser Asn Leu Arg Asn Val Val Glu Ala Gln Phe  
65 70 75 80

<210> 273

<211> 125

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Zn\_carbOpept  
domain sequence

<400> 273

Tyr His Asn Leu Glu Glu Ile Tyr Ala Trp Leu Asp Leu Leu Val Ser  
1 5 10 15

Asn Phe Pro Asp Leu Val Ser Lys Val Ser Ile Gly Lys Ser Tyr Glu  
20 25 30

Gly Arg Asp Leu Lys Val Leu Lys Ile Ser Asp Asn Pro Ala Thr Gly  
35 40 45

Glu Asn Glu Pro Glu Val Phe Ala Val Ala Gly Trp Ile His Ala Arg  
50 55 60

Glu Trp Val Thr Ser Ala Thr Leu Leu Trp Leu Leu Lys Glu Leu Val  
65 70 75 80

Ala Asn Tyr Gly Ser Asp Lys Thr Ile Thr Lys Leu Leu Asp Gly Leu  
85 90 95

Asp Leu Phe Tyr Ile Leu Pro Val Phe Asn Pro Asp Gly Tyr Ala Tyr  
100 105 110

Ser Ile Thr Thr Asp Ser Tyr Arg Met Trp Arg Lys Thr  
115 120 125

<210> 274

<211> 118

<212> PRT

<213> Homo sapiens

<400> 274

Tyr Asn Lys Trp Glu Thr Ile Glu Ala Trp Thr Gln Gln Val Ala Thr  
1 5 10 15

Glu Asn Pro Ala Leu Ile Ser Arg Ser Val Ile Gly Thr Thr Phe Glu  
20 25 30

Gly Arg Ala Ile Tyr Leu Leu Lys Val Gly Lys Ala Gly Gln Asn Lys  
35 40 45

Pro Ala Ile Phe Met Glu Cys Gly Phe His Ala Arg Glu Trp Ile Ser  
50 55 60

Pro Ala Phe Cys Gln Trp Phe Val Arg Glu Ala Val Arg Thr Tyr Gly  
65 70 75 80

Arg Glu Ile Gln Val Thr Glu Leu Leu Asp Lys Leu Asp Phe Tyr Val  
85 90 95

Leu Pro Val Leu Asn Ile Asp Gly Tyr Ile Tyr Thr Trp Thr Lys Ser  
100 105 110

Arg Phe Trp Arg Lys Thr  
115

<210> 275

<211> 101

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Zn\_carbOpept  
domain sequence

<400> 275

Leu Leu Tyr Pro Tyr Gly Tyr Asp Tyr Asn Leu Asn Pro Asp Ala Asn  
1 5 10 15

Asp Leu Asp Glu Leu Ser Asp Leu Lys Ile Ala Ala Asp Ala Leu Ser  
20 25 30

Ala Arg His Gly Thr Tyr Tyr Thr Leu Gly Leu Pro Gly Ser Ser Thr  
35 40 45

Ile Tyr Pro Ala Ser Ala Gly Gly Ser Asp Asp Trp Ala Tyr Asp Val  
50 55 60  
Gly Ile Ile Lys Tyr Ala Phe Thr Phe Glu Leu Arg Pro Asp Thr Gly  
65 70 75 80  
Ser Tyr Gly Asn Pro Cys Phe Leu Leu Pro Glu Glu Gln Ile Ile Pro  
85 90 95  
Thr Gly Ser Glu Glu  
100

<210> 276  
<211> 91  
<212> PRT  
<213> Homo sapiens

<400> 276  
Trp Ile Tyr Pro Tyr Ser Tyr Ala Tyr Lys Leu Gly Glu Asn Asn Ala  
1 5 10 15  
Glu Leu Asn Ala Leu Ala Lys Ala Thr Val Lys Glu Leu Ala Ser Leu  
20 25 30  
His Gly Thr Lys Tyr Thr Tyr Gly Pro Gly Ala Thr Thr Ile Tyr Pro  
35 40 45  
Ala Ala Gly Gly Ser Asp Asp Trp Ala Tyr Asp Gln Gly Ile Arg Tyr  
50 55 60  
Ser Phe Thr Phe Glu Leu Arg Asp Thr Gly Arg Tyr Gly Phe Leu Leu  
65 70 75 80  
Pro Glu Ser Gln Ile Arg Ala Thr Cys Glu Glu  
85 90

<210> 277  
<211> 159  
<212> PRT  
<213> Homo sapiens

<400> 277  
Met Ala Lys Ser Lys Asn His Thr Thr His Asn Gln Ser Arg Lys Trp  
1 5 10 15  
His Arg Asn Gly Ile Lys Lys Pro Arg Ser Gln Arg Tyr Glu Ser Leu

	20		25		30
Lys Gly Val Asp Pro Lys Phe Leu Arg Asn Met Arg Phe Ala Lys Lys					
	35		40		45
His Asn Lys Lys Gly Leu Lys Lys Met Gln Ala Asn Asn Ala Lys Ala					
	50		55		60
Met Ser Ala Arg Ala Glu Ala Ile Lys Ala Leu Val Lys Pro Lys Glu					
	65		70		75 80
Val Lys Pro Lys Ile Pro Lys Gly Val Ser Arg Lys Leu Asp Arg Leu					
		85		90	95
Ala Tyr Ile Ala His Pro Lys Leu Gly Lys Arg Ala Arg Ala Arg Ile					
	100		105		110
Ala Lys Gly Leu Arg Leu Cys Arg Pro Lys Ala Lys Ala Lys Ala Lys					
	115		120		125
Ala Lys Asp Gln Thr Lys Ala Gln Ala Ala Ala Pro Ala Ser Val Pro					
	130		135		140
Ala Gln Ala Pro Lys Arg Thr Gln Ala Pro Thr Lys Ala Ser Glu					
	145		150		155

<210> 278

<211> 157

<212> PRT

<213> Homo sapiens

<400> 278

Met Ala Lys Ser Lys Asn His Thr Thr His Asn Gln Ser Arg Lys Trp					
1		5		10	15
His Arg Asn Gly Ile Lys Lys Pro Arg Ser Gln Arg Tyr Glu Ser Leu					
	20		25		30
Lys Gly Val Asp Pro Lys Phe Leu Arg Asn Met Arg Phe Ala Lys Lys					
	35		40		45
His Asn Lys Lys Gly Leu Lys Lys Met Gln Ala Asn Asn Ala Lys Ala					
	50		55		60
Met Ser Ala Arg Ala Glu Ala Ile Lys Ala Leu Val Lys Pro Lys Glu					
	65		70		75 80

Val Lys Pro Lys Ile Pro Lys Gly Val Ser Cys Lys Leu Asp Arg His  
85 90 95

Ala Tyr Val Ala His Pro Lys Leu Gly Lys Arg Ala Leu Ala Arg Ile  
100 105 110

Ala Lys Gly Leu Arg Leu Cys Arg Pro Lys Ala Lys Ala Lys Ala Lys  
115 120 125

Asp Gln Thr Lys Ala Gln Ala Ala Ala Pro Ala Ser Val Pro Ala Gln  
130 135 140

Ala Pro Lys Gly Thr Gln Ala Pro Thr Lys Ala Ser Glu  
145 150 155

<210> 279

<211> 155

<212> PRT

<213> Homo sapiens

<400> 279

Met Ala Lys Ser Lys Asn His Thr Thr His Asn Gln Ser Arg Lys Trp  
1 5 10 15

His Arg Asn Gly Ile Lys Lys Pro Arg Ser Gln Arg Tyr Glu Ser Leu  
20 25 30

Lys Gly Val Asp Pro Lys Phe Leu Arg Asn Met His Phe Ala Lys Lys  
35 40 45

His Asn Lys Lys Gly Leu Lys Lys Met Gln Ala Asn Asn Ala Lys Ala  
50 55 60

Met Ser Ala Arg Ala Glu Ala Ile Lys Ala Leu Val Lys Pro Lys Glu  
65 70 75 80

Val Lys Pro Lys Ile Pro Lys Gly Val Ser Arg Lys Leu Asp Arg Leu  
85 90 95

Ala Tyr Ile Ala His Pro Lys Leu Gly Lys Arg Ala Arg Ala Arg Ile  
100 105 110

Ala Lys Gly Leu Arg Leu Cys Arg Pro Lys Ala Lys Ala Lys Asp Gln  
115 120 125

Thr Lys Ala Gln Ala Ala Ala Pro Pro Ser Val Pro Ala Gln Ala Pro  
130 135 140

Lys Gly Ala Gln Ala Pro Thr Lys Ala Ser Glu  
 145 150 155

<210> 280  
 <211> 159  
 <212> PRT  
 <213> Homo sapiens

<400> 280  
 Met Ala Lys Ser Lys Asn His Thr Thr His Asn Gln Ser Arg Lys Trp  
 1 5 10 15

His Arg Asn Gly Ile Lys Lys Pro Arg Ser Gln Arg Tyr Glu Ser Leu  
 20 25 30

Lys Gly Val Asp Pro Lys Phe Leu Arg Asn Met Arg Phe Ala Lys Lys  
 35 40 45

His Asn Lys Lys Gly Leu Lys Lys Met Gln Ala Asn Asn Ala Lys Ala  
 50 55 60

Met Ser Ala Arg Ala Glu Ala Ile Lys Ala Leu Val Lys Pro Lys Glu  
 65 70 75 80

Val Lys Pro Lys Ile Pro Lys Gly Val Ser Arg Lys Leu Asp Arg Leu  
 85 90 95

Ala Tyr Ile Ala His Pro Lys Leu Gly Lys Arg Ala Arg Ala Arg Ile  
 100 105 110

Ala Lys Gly Leu Arg Leu Cys Ala Pro Lys Ala Lys Ala Lys Ala Lys  
 115 120 125

Ala Lys Asp Gln Thr Lys Ala Gln Ala Ala Ala Pro Ala Ser Val Pro  
 130 135 140

Ala Gln Ala Pro Lys Arg Thr Gln Ala Pro Thr Lys Ala Ser Glu  
 145 150 155

<210> 281  
 <211> 189  
 <212> PRT  
 <213> Homo sapiens

<400> 281



Met Ala Lys Ser Lys Asn His Asn Thr His Asp Gln Phe Gln Lys Arg  
 1 5 10 15  
 His Arg Asn Gly Ile Lys Lys Pro Gln Ser Gln Arg Ser Val Ser Leu  
 20 25 30  
 Lys Gly Val Asp Pro Lys Phe Leu Arg Asn Met Pro Phe Ala Lys Lys  
 35 40 45  
 His Ser Lys Lys Gly Leu Lys Lys Met Gln Ala Asn Ser Ala Lys Ala  
 50 55 60  
 Met Ser Ala Arg Ala Lys Ala Ile Lys Ala Leu Val Lys Pro Lys Glu  
 65 70 75 80  
 Val Lys Pro Lys Ile Pro Lys Gly Val Ser Arg Lys Leu Asn Gln Leu  
 85 90 95  
 Ala Tyr Thr Gly Tyr Pro Lys Leu Gly Lys His Ala Cys Ala Arg Ile  
 100 105 110  
 Ala Lys Ala Leu Arg Leu Cys Arg Pro Lys Ala Lys Ala Lys Asp Gln  
 115 120 125  
 Thr Lys Ala Gln Ala Ala Ala Pro Ala Ser Val Pro Ala Gln Ala Pro  
 130 135 140  
 Lys Gly Ala Gln Ser Pro Tyr Lys Gly Phe Arg Val Glu Ile Ser Val  
 145 150 155 160  
 Cys Gln Arg Glu Asp Arg Arg Thr Gly Ala Thr Pro Pro Gly Cys His  
 165 170 175  
 Arg His Gly Ala Gly Val Leu Leu Cys Tyr Leu Tyr Lys  
 180 185

<210> 282

<211> 40

<212> PRT

<213> Homo sapiens

<400> 282

Lys Ser Lys Asn His Thr Thr His Asn Gln Ser Arg Lys Trp His Arg  
 1 5 10 15  
 Asn Gly Ile Lys Lys Pro Arg Ser Gln Arg Tyr Glu Ser Leu Lys Gly  
 20 25 30

Val Asp Pro Lys Phe Leu Arg Asn  
35 40

<210> 283  
<211> 40  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Ribosomal\_L29e  
domain sequence

<400> 283  
Lys Ser Lys Asn His Thr Asn His Asn Gln Asn Lys Lys Ala His Arg  
1 5 10 15  
Asn Gly Ile Lys Lys Pro Gln Lys Lys Arg Tyr Leu Ser Leu Lys Gly  
20 25 30

Val Asp Ala Lys Phe Arg Arg Asn  
35 40

<210> 284  
<211> 8  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: tandem repeat  
unique to hRPL29

<400> 284  
Lys Ala Lys Ala Lys Ala Lys Ala  
1 5

<210> 285  
<211> 790  
<212> PRT  
<213> Homo sapiens

<400> 285  
Met Arg Ser Val Gln Ile Phe Leu Ser Gln Cys Arg Leu Leu Leu Leu  
1 5 10 15

Leu Val Pro Thr Met Leu Leu Lys Ser Leu Gly Glu Asp Val Ile Phe  
 20 25 30  
 His Pro Glu Gly Glu Phe Asp Ser Tyr Glu Val Thr Ile Pro Glu Lys  
 35 40 45  
 Leu Ser Phe Arg Gly Glu Val Gln Gly Val Val Ser Pro Val Ser Tyr  
 50 55 60  
 Leu Leu Gln Leu Lys Gly Lys Lys His Val Leu His Leu Trp Pro Lys  
 65 70 75 80  
 Arg Leu Leu Leu Pro Arg His Leu Arg Val Phe Ser Phe Thr Glu His  
 85 90 95  
 Gly Glu Leu Leu Glu Asp His Pro Tyr Ile Pro Lys Asp Cys Asn Tyr  
 100 105 110  
 Met Gly Ser Val Lys Glu Ser Leu Asp Ser Lys Ala Thr Ile Ser Thr  
 115 120 125  
 Cys Met Gly Gly Leu Arg Gly Val Phe Asn Ile Asp Ala Lys His Tyr  
 130 135 140  
 Gln Ile Glu Pro Leu Lys Ala Ser Pro Ser Phe Glu His Val Val Tyr  
 145 150 155 160  
 Leu Leu Lys Lys Glu Gln Phe Gly Asn Gln Val Cys Gly Leu Ser Asp  
 165 170 175  
 Asp Glu Ile Glu Trp Gln Met Ala Pro Tyr Glu Asn Lys Ala Arg Leu  
 180 185 190  
 Arg Asp Phe Pro Gly Ser Tyr Lys His Pro Lys Tyr Leu Glu Leu Ile  
 195 200 205  
 Leu Leu Phe Asp Gln Ser Arg Tyr Arg Phe Val Asn Asn Asn Leu Ser  
 210 215 220  
 Gln Val Ile His Asp Ala Ile Leu Leu Thr Gly Ile Met Asp Thr Tyr  
 225 230 235 240  
 Phe Gln Asp Val Arg Met Arg Ile His Leu Lys Ala Leu Glu Val Trp  
 245 250 255  
 Thr Asp Phe Asn Lys Ile Arg Val Gly Tyr Pro Glu Leu Ala Glu Val  
 260 265 270

Leu Gly Arg Phe Val Ile Tyr Lys Lys Ser Val Leu Asn Ala Arg Leu  
 275 280 285

Ser Ser Asp Trp Ala His Leu Tyr Leu Gln Arg Lys Tyr Asn Asp Ala  
 290 295 300

Leu Ala Trp Ser Phe Gly Lys Val Cys Ser Leu Glu Tyr Ala Gly Ser  
 305 310 315 320

Val Ser Thr Leu Leu Asp Thr Asn Ile Leu Ala Pro Ala Thr Trp Ser  
 325 330 335

Ala His Glu Leu Gly His Ala Val Gly Met Ser His Asp Glu Gln Tyr  
 340 345 350

Cys Gln Cys Arg Gly Arg Pro Asn Cys Ile Met Gly Ser Gly Arg Thr  
 355 360 365

Gly Phe Ser Asn Cys Ser Tyr Ile Ser Phe Phe Lys His Ile Ser Ser  
 370 375 380

Gly Ala Thr Cys Leu Asn Asn Ile Pro Gly Leu Gly Tyr Val Leu Lys  
 385 390 395 400

Arg Cys Gly Asn Lys Ile Val Glu Asp Asn Glu Glu Cys Asp Cys Gly  
 405 410 415

Ser Thr Glu Glu Cys Gln Lys Asp Arg Cys Cys Gln Ser Asn Cys Lys  
 420 425 430

Leu Gln Pro Gly Ala Asn Cys Ser Ile Gly Leu Cys Cys His Asp Cys  
 435 440 445

Arg Phe Arg Pro Ser Gly Tyr Val Cys Arg Gln Glu Gly Asn Glu Cys  
 450 455 460

Asp Leu Ala Glu Tyr Cys Asp Gly Asn Ser Ser Ser Cys Pro Asn Asp  
 465 470 475 480

Val Tyr Lys Gln Asp Gly Thr Pro Cys Lys Tyr Glu Gly Arg Cys Phe  
 485 490 495

Arg Lys Gly Cys Arg Ser Arg Tyr Met Gln Cys Gln Ser Ile Phe Gly  
 500 505 510

Pro Asp Ala Met Glu Ala Pro Ser Glu Cys Tyr Asp Ala Val Asn Leu  
 515 520 525

Ile Gly Asp Gln Phe Gly Asn Cys Glu Ile Thr Gly Ile Arg Asn Phe  
 530 535 540

Lys Lys Cys Glu Ser Ala Asn Ser Ile Cys Gly Arg Leu Gln Cys Ile  
 545 550 555 560

Asn Val Glu Thr Ile Pro Asp Leu Pro Glu His Thr Thr Ile Ile Ser  
 565 570 575

Thr His Leu Gln Ala Glu Asn Leu Met Cys Trp Gly Thr Gly Tyr His  
 580 585 590

Leu Ser Met Lys Pro Met Gly Ile Pro Asp Leu Gly Met Ile Asn Asp  
 595 600 605

Gly Thr Ser Cys Gly Glu Gly Arg Val Cys Phe Lys Lys Asn Cys Val  
 610 615 620

Asn Ser Ser Val Leu Gln Phe Asp Cys Leu Pro Glu Lys Cys Asn Thr  
 625 630 635 640

Arg Gly Val Cys Asn Asn Arg Lys Asn Cys His Cys Met Tyr Gly Trp  
 645 650 655

Ala Pro Pro Phe Cys Glu Glu Val Gly Tyr Gly Gly Ser Ile Asp Ser  
 660 665 670

Gly Pro Pro Gly Leu Leu Arg Gly Ala Ile Pro Ser Ser Ile Trp Val  
 675 680 685

Val Ser Ile Ile Met Phe Arg Leu Ile Leu Leu Ile Leu Ser Val Val  
 690 695 700

Phe Val Phe Phe Arg Gln Val Ile Gly Asn His Leu Lys Pro Lys Gln  
 705 710 715 720

Glu Lys Met Pro Leu Ser Lys Ala Lys Thr Glu Gln Glu Glu Ser Lys  
 725 730 735

Thr Lys Thr Val Gln Glu Glu Ser Lys Thr Lys Thr Gly Gln Glu Glu  
 740 745 750

Ser Glu Ala Lys Thr Gly Gln Glu Glu Ser Lys Ala Lys Thr Gly Gln  
 755 760 765

Glu Glu Ser Lys Ala Asn Ile Glu Ser Lys Arg Pro Lys Ala Lys Ser  
 770 775 780

Val Lys Lys Gln Lys Lys  
785 790

<210> 286

<211> 781

<212> PRT

<213> Homo sapiens

<400> 286

Met Arg Ser Val Gln Ile Phe Leu Ser Gln Cys Arg Leu Leu Leu Leu  
1 5 10 15  
Leu Val Pro Thr Met Leu Leu Lys Ser Leu Gly Glu Asp Val Ile Phe  
20 25 30  
His Pro Glu Gly Glu Phe Asp Ser Tyr Glu Val Thr Ile Pro Glu Lys  
35 40 45  
Leu Ser Phe Arg Gly Glu Val Gln Gly Val Val Ser Pro Val Ser Tyr  
50 55 60  
Leu Leu Gln Leu Lys Gly Lys Lys His Val Leu His Leu Trp Pro Lys  
65 70 75 80  
Arg Leu Leu Leu Pro Arg His Leu Arg Val Phe Ser Phe Thr Glu His  
85 90 95  
Gly Glu Leu Leu Glu Asp His Pro Tyr Ile Pro Lys Asp Cys Asn Tyr  
100 105 110  
Met Gly Ser Val Lys Glu Ser Leu Asp Ser Lys Ala Thr Ile Ser Thr  
115 120 125  
Cys Met Gly Gly Leu Arg Gly Val Phe Asn Ile Asp Ala Lys His Tyr  
130 135 140  
Gln Ile Glu Pro Leu Lys Ala Ser Pro Ser Phe Glu His Val Val Tyr  
145 150 155 160  
Leu Leu Lys Lys Glu Gln Phe Gly Asn Gln Val Cys Gly Leu Ser Asp  
165 170 175  
Asp Glu Ile Glu Trp Gln Met Ala Pro Tyr Glu Asn Lys Ala Arg Leu  
180 185 190  
Arg Asp Phe Pro Gly Ser Tyr Lys His Pro Lys Tyr Leu Glu Leu Ile  
195 200 205

Leu Leu Phe Asp Gln Ser Arg Tyr Arg Phe Val Asn Asn Asn Leu Ser  
 210 215 220  
 Gln Val Ile His Asp Ala Ile Leu Leu Thr Gly Ile Met Asp Thr Tyr  
 225 230 235 240  
 Phe Gln Asp Val Arg Met Arg Ile His Leu Lys Ala Leu Glu Val Trp  
 245 250 255  
 Thr Asp Phe Asn Lys Ile Arg Val Gly Tyr Pro Glu Leu Ala Glu Val  
 260 265 270  
 Leu Gly Arg Phe Val Ile Tyr Lys Lys Ser Val Leu Asn Ala Arg Leu  
 275 280 285  
 Ser Ser Asp Trp Ala His Leu Tyr Leu Gln Arg Lys Tyr Asn Asp Ala  
 290 295 300  
 Leu Ala Trp Ser Phe Gly Lys Val Cys Ser Leu Glu Tyr Ala Gly Ser  
 305 310 315 320  
 Val Ser Thr Leu Leu Asp Thr Asn Ile Leu Ala Pro Ala Thr Trp Pro  
 325 330 335  
 Ala His Glu Leu Gly His Ala Val Gly Met Ser His Asp Glu Gln Tyr  
 340 345 350  
 Cys Gln Cys Arg Gly Arg Leu Asn Cys Ile Met Gly Ser Gly Arg Thr  
 355 360 365  
 Gly Phe Ser Asn Cys Ser Tyr Ile Ser Phe Phe Lys His Ile Ser Ser  
 370 375 380  
 Gly Ala Thr Cys Leu Asn Asn Ile Pro Gly Leu Gly Tyr Val Leu Lys  
 385 390 395 400  
 Arg Cys Gly Asn Lys Ile Val Glu Asp Asn Glu Glu Cys Asp Cys Gly  
 405 410 415  
 Ser Thr Glu Glu Cys Gln Lys Asp Arg Cys Cys Gln Ser Asn Cys Lys  
 420 425 430  
 Leu Gln Pro Gly Ala Asn Cys Ser Ile Gly Leu Cys Cys His Asp Cys  
 435 440 445  
 Arg Phe Arg Pro Ser Gly Tyr Val Cys Arg Gln Glu Gly Asn Glu Cys  
 450 455 460

Asp Leu Ala Glu Tyr Cys Asp Gly Asn Ser Ser Ser Cys Pro Asn Asp  
 465 470 475 480  
 Val Tyr Lys Gln Asp Gly Thr Pro Cys Lys Tyr Glu Gly Arg Cys Phe  
 485 490 495  
 Arg Lys Gly Cys Arg Ser Arg Tyr Met Gln Cys Gln Ser Ile Phe Gly  
 500 505 510  
 Pro Asp Ala Met Glu Ala Pro Ser Glu Cys Tyr Asp Ala Val Asn Leu  
 515 520 525  
 Ile Gly Asp Gln Phe Gly Asn Cys Glu Ile Thr Gly Ile Arg Asn Phe  
 530 535 540  
 Lys Lys Cys Glu Ser Ala Asn Ser Ile Cys Gly Arg Leu Gln Cys Ile  
 545 550 555 560  
 Asn Val Glu Thr Ile Pro Asp Leu Pro Glu His Thr Thr Ile Ile Ser  
 565 570 575  
 Thr His Leu Gln Ala Glu Asn Leu Met Cys Trp Gly Thr Gly Tyr His  
 580 585 590  
 Leu Ser Met Lys Pro Met Gly Ile Pro Asp Leu Gly Met Ile Asn Asp  
 595 600 605  
 Gly Thr Ser Cys Gly Glu Gly Arg Val Cys Phe Lys Lys Asn Cys Val  
 610 615 620  
 Asn Ser Ser Val Leu Gln Phe Asp Cys Leu Pro Glu Lys Cys Asn Thr  
 625 630 635 640  
 Arg Gly Val Cys Asn Asn Arg Lys Asn Cys His Cys Met Tyr Gly Trp  
 645 650 655  
 Ala Pro Pro Phe Cys Glu Glu Val Gly Tyr Gly Gly Ser Ile Asp Ser  
 660 665 670  
 Gly Pro Pro Gly Leu Leu Arg Gly Ala Ile Pro Ser Ser Ile Trp Val  
 675 680 685  
 Val Ser Ile Ile Met Phe Arg Leu Ile Leu Leu Ile Leu Ser Val Val  
 690 695 700  
 Phe Val Phe Phe Arg Gln Val Ile Gly Asn His Leu Lys Pro Lys Gln  
 705 710 715 720



Glu Lys Met Pro Leu Ser Lys Ala Lys Thr Glu Gln Glu Glu Ser Lys  
725 730 735

Thr Lys Thr Val Gln Glu Glu Ser Lys Thr Lys Thr Gly Gln Glu Glu  
740 745 750

Ser Glu Ala Lys Thr Gly Gln Glu Glu Ser Lys Ala Asn Ile Glu Ser  
755 760 765

Lys Arg Pro Lys Ala Lys Ser Val Lys Lys Gln Lys Lys  
770 775 780

<210> 287

<211> 729

<212> PRT

<213> Mus musculus

<400> 287

Met Glu Cys Phe Ile Met Leu Gly Ala Asp Ala Arg Thr Leu Met Arg  
1 5 10 15

Val Thr Leu Leu Leu Leu Trp Leu Lys Ala Leu Pro Ser Leu Ile Asp  
20 25 30

Leu Ser Gln Thr Gly Ser Thr Gln Tyr Leu Ser Ser Pro Glu Val Val  
35 40 45

Ile Pro Leu Lys Val Thr Ser Arg Ala Arg Gly Ala Lys Asn Ser Glu  
50 55 60

Trp Leu Ser Tyr Ser Leu Val Phe Gly Gly Arg Arg His Val Val His  
65 70 75 80

Met Arg Val Lys Lys Leu Leu Val Ser Thr His Ile Pro Val Leu Thr  
85 90 95

Tyr Thr Glu Glu His Thr Pro Leu Ser Asp Tyr Pro Phe Val Pro Ser  
100 105 110

Asp Cys Tyr Tyr His Gly Tyr Val Glu Gly Ala Leu Glu Ser Leu Val  
115 120 125

Ala Phe Ser Ala Cys Asn Gly Gly Leu Gln Gly Val Leu Gln Met Asn  
130 135 140

Gly Phe Ser Tyr Glu Ile Glu Pro Ile Lys His Ser Ser Thr Phe Glu

145                      150                      155                      160  
 His Leu Val Tyr Thr Leu Asn Asn Asn Lys Thr Gln Phe Pro Pro Met  
                                  165                      170                      175  
 Leu Cys Ser Leu Thr Glu Lys Arg Leu Leu Tyr Gln Pro Phe Gly Val  
                                  180                      185                      190  
 Glu Glu Ala Lys Lys Ser Ala Met Lys Gln Asn Tyr Gly Lys Leu Trp  
                                  195                      200                      205  
 Pro His Met Trp Phe Leu Glu Leu Ala Val Val Val Asp Tyr Gly Phe  
                                  210                      215                      220  
 Phe Thr Asn Ala Gln Gln Asn Leu Ser Lys Val Arg Gly Asp Val Val  
                                  225                      230                      235                      240  
 Leu Val Val Asn Met Val Asp Ser Met Tyr Lys Pro Leu Asp Thr Tyr  
                                  245                      250                      255  
 Val Thr Leu Val Gly Ile Glu Ile Trp Asn Arg Gly Asn Val Leu Pro  
                                  260                      265                      270  
 Met Glu Asn Ile His Gln Val Leu Glu Asp Phe Ser His Trp Lys Gln  
                                  275                      280                      285  
 Ile Ser Leu Ser Gln Val His His Asp Ala Ala His Ile Phe Ile Arg  
                                  290                      295                      300  
 Ser Ser Leu Ile Ser Val Leu Gly Ile Ala Tyr Ile Ala Gly Ile Cys  
                                  305                      310                      315                      320  
 Arg Pro Pro Leu Asp Cys Gly Val Glu Asn Phe Gln Gly Asp Ala Trp  
                                  325                      330                      335  
 Ser Leu Phe Ala Asn Thr Val Ala His Glu Leu Gly His Thr Phe Gly  
                                  340                      345                      350  
 Met Lys His Asp Glu Glu Ser Cys Ser Cys Gly Lys Ser Gly Cys Val  
                                  355                      360                      365  
 Met Ser Thr Phe Arg Val Pro Ala Glu Arg Phe Thr Asn Cys Ser Tyr  
                                  370                      375                      380  
 Ser Asp Phe Met Lys Thr Thr Leu Asn Gln Gly Thr Cys Leu Tyr Asn  
                                  385                      390                      395                      400  
 His Pro Arg Pro Gly Ala Gly Phe Leu Val Lys Arg Cys Gly Asn Gly

405	410	415
Met Val Glu Ser Glu Glu Glu Cys Asp Cys Gly Ser Val Gln Glu Cys		
420	425	430
Glu Gln Asp Pro Cys Cys Phe Leu Asn Cys Thr Leu Arg Pro Ala Ala		
435	440	445
Ala Cys Ser Phe Gly Leu Cys Cys Lys Asp Cys Lys Phe Met Leu Leu		
450	455	460
Gly Glu Leu Cys Arg Pro Lys Ile Asn Glu Cys Asp Leu Pro Glu Trp		
465	470	475
		480
Cys Asn Gly Thr Ser His Gln Cys Pro Glu Asp Gly Tyr Val Gln Asp		
485	490	495
Gly Val Pro Cys Gly Ala Gly Ala Tyr Cys Tyr Gln Lys Gln Cys Asn		
500	505	510
Asn His Asp Gln Gln Cys Arg Glu Ile Phe Gly Lys Gly Ala Arg Ser		
515	520	525
Ala Ser His Asn Cys Tyr Lys Glu Ile Asn Leu Gln Gly Asn Arg Phe		
530	535	540
Gly His Cys Gly Thr Asp Gly Thr Val Phe Leu Lys Cys Arg Met Ser		
545	550	555
		560
Asp Val Phe Cys Gly Lys Val His Cys Glu Asn Val Glu Asp Ile His		
565	570	575
His Pro Gln Ala Pro Tyr Val Leu Gln Asn Ile Tyr Ala Asn Gly Ile		
580	585	590
Thr Cys Trp Ser Thr Gly His Cys Leu Gly Met Gly Val Pro Asp Val		
595	600	605
Gly Glu Val Lys Asp Gly Thr Thr Cys Gly Val Gly Lys Ile Cys Leu		
610	615	620
His Lys Lys Cys Val Ser Leu Ser Val Leu Ser Asn Ala Cys Leu Pro		
625	630	635
		640
Glu Thr Cys Asn Arg Lys Gly Val Cys Asn Asn Lys His His Cys His		
645	650	655
Cys Asp Tyr Gly Trp Ser Pro Pro Phe Cys Leu His Arg Gly Tyr Gly		



Ile Glu Pro Ile Arg His Ser Ala Thr Phe Glu His Leu Val Tyr Lys  
 145 150 155 160  
 Ile Asn Ser Asn Glu Thr Gln Phe Pro Ala Met Arg Cys Gly Leu Thr  
 165 170 175  
 Glu Lys Glu Val Ala Arg Gln Gln Leu Glu Phe Glu Glu Ala Glu Asn  
 180 185 190  
 Ser Ala Leu Glu Pro Lys Ser Ala Gly Asp Trp Trp Thr His Ala Trp  
 195 200 205  
 Phe Leu Glu Leu Val Val Val Val Asn His Asp Phe Phe Ile Tyr Ser  
 210 215 220  
 Gln Ser Asn Ile Ser Lys Val Gln Glu Asp Val Phe Leu Val Val Asn  
 225 230 235 240  
 Ile Val Asp Ser Met Tyr Lys Gln Leu Gly Thr Tyr Ile Ile Leu Ile  
 245 250 255  
 Gly Ile Glu Ile Trp Asn Gln Gly Asn Val Phe Pro Met Thr Ser Ile  
 260 265 270  
 Glu Gln Val Leu Asn Asp Phe Ser Gln Trp Lys Gln Ile Ser Leu Ser  
 275 280 285  
 Gln Leu Gln His Asp Ala Ala His Met Phe Ile Lys Asn Ser Leu Ile  
 290 295 300  
 Ser Ile Leu Gly Leu Ala Tyr Val Ala Gly Ile Cys Arg Pro Pro Ile  
 305 310 315 320  
 Asp Cys Gly Val Asp Asn Phe Gln Gly Asp Thr Trp Ser Leu Phe Ala  
 325 330 335  
 Asn Thr Val Ala His Glu Leu Gly His Thr Leu Gly Met Gln His Asp  
 340 345 350  
 Glu Glu Phe Cys Phe Cys Gly Glu Arg Gly Cys Ile Met Asn Thr Phe  
 355 360 365  
 Arg Val Pro Ala Glu Lys Phe Thr Asn Cys Ser Tyr Ala Asp Phe Met  
 370 375 380  
 Lys Thr Thr Leu Asn Gln Gly Ser Cys Leu His Asn Pro Pro Arg Leu  
 385 390 395 400

Gly Glu Ile Phe Met Leu Lys Arg Cys Gly Asn Gly Val Val Glu Arg  
 405 410 415  
 Glu Glu Gln Cys Asp Cys Gly Ser Val Gln Gln Cys Glu Gln Asp Ala  
 420 425 430  
 Cys Cys Leu Leu Asn Cys Thr Leu Arg Pro Gly Ala Ala Cys Ala Phe  
 435 440 445  
 Gly Leu Cys Cys Lys Asp Cys Lys Phe Met Pro Ser Gly Glu Leu Cys  
 450 455 460  
 Arg Gln Glu Val Asn Glu Cys Asp Leu Pro Glu Trp Cys Asn Gly Thr  
 465 470 475 480  
 Ser His Gln Cys Pro Glu Asp Arg Tyr Val Gln Asp Gly Ile Pro Cys  
 485 490 495  
 Ser Asp Ser Ala Tyr Cys Tyr Gln Lys Arg Cys Asn Asn His Asp Gln  
 500 505 510  
 His Cys Arg Glu Ile Phe Gly Lys Asp Ala Lys Ser Ala Ser Gln Asn  
 515 520 525  
 Cys Tyr Lys Glu Ile Asn Ser Gln Gly Asn Arg Phe Gly His Cys Gly  
 530 535 540  
 Ile Asn Gly Thr Thr Tyr Leu Lys Cys His Ile Ser Asp Val Phe Cys  
 545 550 555 560  
 Gly Arg Val Gln Cys Glu Asn Val Arg Asp Ile Pro Leu Leu Gln Asp  
 565 570 575  
 His Phe Thr Leu Gln His Thr His Ile Asn Gly Val Thr Cys Trp Gly  
 580 585 590  
 Ile Asp Tyr His Leu Arg Met Asn Ile Ser Asp Ile Gly Glu Val Lys  
 595 600 605  
 Asp Gly Thr Val Cys Gly Pro Gly Lys Ile Cys Ile His Lys Lys Cys  
 610 615 620  
 Val Ser Leu Ser Val Leu Ser His Val Cys Leu Pro Glu Thr Cys Asn  
 625 630 635 640  
 Met Lys Gly Ile Cys Asn Asn Lys His His Cys His Cys Gly Tyr Gly  
 645 650 655

Trp Ser Pro Pro Tyr Cys Gln His Arg Gly Tyr Gly Gly Ser Ile Asp  
660 665 670

Ser Gly Pro Ala Ser Ala Lys Arg Gly Val Phe Leu Pro Leu Ile Val  
675 680 685

Ile Pro Ser Leu Ser Val Leu Thr Phe Leu Phe Thr Val Gly Leu Leu  
690 695 700

Met Tyr Leu Arg Gln Cys Ser Gly Pro Lys Glu Thr Lys Ala His Ser  
705 710 715 720

Ser Gly

<210> 289

<211> 722

<212> PRT

<213> Homo sapiens

<400> 289

Met Ala Val Asp Gly Thr Leu Val Tyr Ile Arg Val Thr Leu Leu Leu  
1 5 10 15

Leu Trp Leu Gly Val Phe Leu Ser Ile Ser Gly Tyr Cys Gln Ala Gly  
20 25 30

Pro Ser Gln His Phe Thr Ser Pro Glu Val Val Ile Pro Leu Lys Val  
35 40 45

Ile Ser Arg Gly Arg Ser Ala Lys Ala Pro Gly Trp Leu Ser Tyr Ser  
50 55 60

Leu Arg Phe Gly Gly Gln Lys His Val Val His Met Arg Val Lys Lys  
65 70 75 80

Leu Leu Val Ser Arg His Leu Pro Val Phe Thr Tyr Thr Asp Glu Arg  
85 90 95

Ala Leu Leu Glu Asp Gln Leu Phe Ile Pro Asp Asp Cys Tyr Tyr His  
100 105 110

Gly Tyr Val Glu Gly Ala Pro Glu Ser Leu Val Val Phe Ser Ala Cys  
115 120 125

Phe Gly Gly Phe Arg Gly Val Leu Lys Ile Ser Gly Leu Thr Tyr Glu  
130 135 140

Ile Glu Pro Ile Arg His Ser Ala Thr Phe Glu His Leu Val Tyr Lys  
 145 150 155 160  
 Val Asn Ser Asn Glu Thr Gln Phe Pro Ala Met Arg Cys Gly Leu Thr  
 165 170 175  
 Glu Lys Glu Val Ala Arg Gln Gln Leu Glu Phe Glu Glu Ala Glu Asn  
 180 185 190  
 Ser Ala Leu Glu Pro Lys Ser Ala Gly Asp Trp Trp Thr His Ala Trp  
 195 200 205  
 Phe Leu Glu Leu Val Val Val Val Asn His Asp Phe Phe Ile Tyr Ser  
 210 215 220  
 Gln Ser Asn Ile Ser Lys Val Gln Glu Asp Val Phe Leu Val Val Asn  
 225 230 235 240  
 Ile Val Asp Ser Met Tyr Gln Gln Leu Gly Thr Tyr Ile Ile Leu Ile  
 245 250 255  
 Gly Ile Glu Ile Trp Asn Gln Gly Asn Val Phe Pro Met Thr Ser Ile  
 260 265 270  
 Glu Gln Val Leu Asn Asp Phe Ser Gln Trp Lys Gln Ile Ser Leu Ser  
 275 280 285  
 Gln Leu Gln His Asp Ala Ala His Met Phe Ile Lys Asn Ser Leu Ile  
 290 295 300  
 Ser Ile Leu Gly Leu Ala Tyr Val Ala Gly Ile Cys Arg Pro Pro Ile  
 305 310 315 320  
 Asp Cys Gly Val Asp Asn Phe Gln Gly Asp Thr Trp Ser Leu Phe Ala  
 325 330 335  
 Asn Thr Val Ala His Glu Leu Gly His Thr Leu Gly Met Gln His Asp  
 340 345 350  
 Glu Glu Phe Cys Phe Cys Gly Glu Arg Gly Cys Ile Met Asn Thr Phe  
 355 360 365  
 Arg Val Pro Ala Glu Lys Phe Thr Asn Cys Ser Tyr Ala Asp Phe Met  
 370 375 380  
 Lys Thr Thr Leu Asn Gln Gly Ser Cys Leu His Asn Pro Pro Arg Leu  
 385 390 395 400



Gly Glu Ile Phe Met Leu Lys Arg Cys Gly Asn Gly Val Val Glu Arg  
 405 410 415  
 Glu Glu Gln Cys Asp Cys Gly Ser Val Gln Gln Cys Glu Gln Asp Ala  
 420 425 430  
 Cys Cys Leu Leu Asn Cys Thr Leu Arg Pro Gly Ala Ala Cys Ala Phe  
 435 440 445  
 Gly Leu Cys Cys Lys Asp Cys Lys Phe Met Pro Ser Gly Glu Leu Cys  
 450 455 460  
 Arg Gln Glu Val Asn Glu Cys Asp Leu Pro Glu Trp Cys Asn Gly Thr  
 465 470 475 480  
 Ser His Gln Cys Pro Glu Asp Arg Tyr Val Gln Asp Gly Ile Pro Cys  
 485 490 495  
 Ser Asp Ser Ala Tyr Cys Tyr Gln Lys Arg Cys Asn Asn His Asp Gln  
 500 505 510  
 His Cys Arg Glu Ile Phe Gly Lys Asp Ala Lys Ser Ala Ser Gln Asn  
 515 520 525  
 Cys Tyr Lys Glu Ile Asn Ser Gln Gly Asn Arg Phe Gly His Cys Gly  
 530 535 540  
 Ile Asn Gly Thr Thr Tyr Leu Lys Cys His Ile Ser Asp Val Phe Cys  
 545 550 555 560  
 Gly Arg Val Gln Cys Glu Asn Val Arg Asp Ile Pro Leu Leu Gln Asp  
 565 570 575  
 His Phe Thr Leu Gln His Thr His Ile Asn Gly Val Thr Cys Trp Gly  
 580 585 590  
 Ile Asp Tyr His Leu Arg Met Asn Ile Ser Asp Ile Gly Glu Val Lys  
 595 600 605  
 Asp Gly Thr Val Cys Gly Pro Gly Lys Ile Cys Ile His Lys Lys Cys  
 610 615 620  
 Val Ser Leu Ser Val Leu Ser His Val Cys Leu Pro Glu Thr Cys Asn  
 625 630 635 640  
 Met Lys Gly Ile Cys Asn Asn Lys His His Cys His Cys Gly Tyr Gly  
 645 650 655

Trp Ser Pro Pro Tyr Cys Gln His Arg Gly Tyr Gly Gly Ser Ile Asp  
660 665 670

Ser Gly Pro Ala Ser Ala Lys Arg Gly Val Phe Leu Pro Leu Ile Val  
675 680 685

Ile Pro Ser Leu Ser Val Leu Thr Phe Leu Phe Thr Val Gly Leu Leu  
690 695 700

Met Tyr Leu Arg Gln Cys Ser Gly Pro Lys Glu Thr Lys Ala His Ser  
705 710 715 720

Ser Gly

<210> 290

<211> 85

<212> PRT

<213> Homo sapiens

<400> 290

His Leu Trp Pro Lys Arg Leu Leu Leu Pro Arg His Leu Arg Val Phe  
1 5 10 15

Ser Phe Thr Glu His Gly Glu Leu Leu Glu Asp His Pro Tyr Ile Pro  
20 25 30

Lys Asp Cys Asn Tyr Met Gly Ser Val Lys Glu Ser Leu Asp Ser Lys  
35 40 45

Ala Thr Ile Ser Thr Cys Met Gly Gly Leu Arg Gly Val Phe Asn Ile  
50 55 60

Asp Ala Lys His Tyr Gln Ile Glu Pro Leu Lys Ala Ser Pro Ser Phe  
65 70 75 80

Glu His Val Val Tyr  
85

<210> 291

<211> 84

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Reprolysin  
family propeptide domain sequence

<400> 291

His	Leu	Glu	Lys	Asn	Arg	Ser	Leu	Leu	Ala	Pro	Asp	Phe	Thr	Val	Thr
1				5					10					15	
Thr	Tyr	Asp	Asp	Asp	Gly	Thr	Leu	Val	Thr	Glu	His	Pro	Leu	Ile	Gln
			20				25						30		
Asp	His	Cys	Tyr	Tyr	Gln	Gly	Tyr	Val	Glu	Gly	Tyr	Pro	Asn	Ser	Ala
		35					40					45			
Val	Ser	Leu	Ser	Thr	Cys	Ser	Gly	Leu	Arg	Gly	Ile	Leu	Gln	Leu	Glu
	50					55					60				
Asn	Leu	Ser	Tyr	Gly	Ile	Glu	Pro	Leu	Glu	Ser	Ser	Asp	Gly	Phe	Glu
65					70					75					80
His	Ile	Ile	Tyr												

<210> 292

<211> 44

<212> PRT

<213> Homo sapiens

<400> 292

Asn	Leu	Met	Cys	Trp	Gly	Thr	Gly	Tyr	His	Leu	Ser	Met	Lys	Pro	Met
1				5					10					15	
Gly	Ile	Pro	Asp	Leu	Gly	Met	Ile	Asn	Asp	Gly	Thr	Ser	Cys	Gly	Glu
			20					25					30		
Gly	Arg	Val	Cys	Phe	Lys	Lys	Asn	Cys	Val	Asn	Ser				
		35					40								

<210> 293

<211> 41

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: ADAM  
Cysteine-Rich Domain sequence

<400> 293

Gly Leu Val Cys Trp Ser Leu Asp Tyr His Leu Gly Ser Asp Ile Pro  
1 5 10 15

Asp Leu Gly Met Val Lys Asp Gly Thr Lys Cys Gly Pro Gly Lys Val  
20 25 30

Cys Ile Asn Gly Gln Cys Val Asp Val  
35 40

<210> 294

<211> 379

<212> PRT

<213> Homo sapiens

<400> 294

Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Gly Val Gly  
1 5 10 15

Gly Glu Arg Ser Ser Arg Pro Ala Pro Ser Val Ala Pro Glu Pro Asp  
20 25 30

Gly Cys Pro Val Cys Val Trp Arg Gln His Ser Arg Glu Leu Arg Leu  
35 40 45

Glu Ser Ile Lys Ser Gln Ile Leu Ser Lys Leu Arg Leu Lys Glu Ala  
50 55 60

Pro Asn Ile Ser Arg Glu Val Val Lys Gln Leu Leu Pro Lys Ala Pro  
65 70 75 80

Pro Leu Gln Gln Ile Leu Asp Leu His Asp Phe Gln Gly Asp Ala Leu  
85 90 95

Gln Pro Glu Asp Phe Leu Glu Glu Asp Glu Tyr His Ala Thr Thr Glu  
100 105 110

Thr Val Ile Ser Met Ala Gln Glu Thr Asp Pro Ala Val Gln Thr Asp  
115 120 125

Gly Ser Pro Leu Cys Cys His Phe His Phe Ser Pro Lys Val Met Phe  
130 135 140

Thr Lys Val Leu Lys Ala Gln Leu Trp Val Tyr Leu Arg Pro Val Pro  
145 150 155 160

Arg Pro Ala Thr Val Tyr Leu Gln Ile Leu Arg Leu Lys Pro Leu Thr

	165		170		175
Gly Glu Gly Thr Ala Gly Gly Gly Gly Gly Gly Arg Arg His Ile Arg	180		185		190
Ile Arg Ser Leu Lys Ile Glu Leu His Ser Arg Ser Gly His Trp Gln	195		200		205
Ser Ile Asp Phe Lys Gln Val Leu His Ser Trp Phe Arg Gln Pro Gln	210		215		220
Ser Asn Trp Gly Ile Glu Ile Asn Ala Phe Asp Pro Ser Gly Thr Asp	225		230		235
Leu Ala Val Thr Ser Leu Gly Pro Gly Ala Glu Gly Leu His Pro Phe	245		250		255
Met Glu Leu Arg Val Leu Glu Asn Thr Lys Arg Ser Arg Arg Asn Leu	260		265		270
Gly Leu Asp Cys Asp Glu His Ser Ser Glu Ser Arg Cys Cys Arg Tyr	275		280		285
Pro Leu Thr Val Asp Phe Glu Ala Phe Gly Trp Asp Trp Ile Ile Ala	290		295		300
Pro Lys Arg Tyr Lys Ala Asn Tyr Cys Ser Gly Gln Cys Glu Tyr Met	305		310		315
Phe Met Gln Lys Tyr Pro His Thr His Leu Val Gln Gln Ala Asn Pro	325		330		335
Arg Gly Ser Ala Gly Pro Cys Cys Thr Pro Thr Lys Met Ser Pro Ile	340		345		350
Asn Met Leu Tyr Phe Asn Asp Lys Gln Gln Ile Ile Tyr Gly Lys Ile	355		360		365
Pro Gly Met Val Val Asp Arg Cys Gly Cys Ser	370		375		

<210> 295

<211> 407

<212> PRT

<213> Homo sapiens

<400> 295

Met Val Leu Ala Ala Pro Leu Leu Leu Gly Phe Leu Leu Leu Ala Leu  
 1 5 10 15  
 Glu Leu Arg Pro Arg Gly Glu Ala Ala Glu Gly Pro Ala Ala Ala Ala  
 20 25 30  
 Ala Ala Ala Ala Ala Ala Ala Ala Gly Val Gly Gly Glu Arg Ser  
 35 40 45  
 Ser Arg Pro Ala Pro Ser Val Ala Pro Glu Pro Asp Gly Cys Pro Val  
 50 55 60  
 Cys Val Trp Arg Gln His Ser Arg Glu Leu Arg Leu Glu Ser Ile Lys  
 65 70 75 80  
 Ser Gln Ile Leu Ser Lys Leu Arg Leu Lys Glu Ala Pro Asn Ile Ser  
 85 90 95  
 Arg Glu Val Val Lys Gln Leu Leu Pro Lys Ala Pro Pro Leu Gln Gln  
 100 105 110  
 Ile Leu Asp Leu His Asp Phe Gln Gly Asp Ala Leu Gln Pro Glu Asp  
 115 120 125  
 Phe Leu Glu Glu Asp Glu Tyr His Ala Thr Thr Glu Thr Val Ile Ser  
 130 135 140  
 Met Ala Gln Glu Thr Asp Pro Ala Val Gln Thr Asp Gly Ser Pro Leu  
 145 150 155 160  
 Cys Cys His Phe His Phe Ser Pro Lys Val Met Phe Thr Lys Val Leu  
 165 170 175  
 Lys Ala Gln Leu Trp Val Tyr Leu Arg Pro Val Pro Arg Pro Ala Thr  
 180 185 190  
 Val Tyr Leu Gln Ile Leu Arg Leu Lys Pro Leu Thr Gly Glu Gly Thr  
 195 200 205  
 Ala Gly Gly Gly Gly Gly Gly Arg Arg His Ile Arg Ile Arg Ser Leu  
 210 215 220  
 Lys Ile Glu Leu His Ser Arg Ser Gly His Trp Gln Ser Ile Asp Phe  
 225 230 235 240  
 Lys Gln Val Leu His Ser Trp Phe Arg Gln Pro Gln Ser Asn Trp Gly  
 245 250 255

Ile Glu Ile Asn Ala Phe Asp Pro Ser Gly Thr Asp Leu Ala Val Thr  
 260 265 270  
 Ser Leu Gly Pro Gly Ala Glu Gly Leu His Pro Phe Met Glu Leu Arg  
 275 280 285  
 Val Leu Glu Asn Thr Lys Arg Ser Arg Arg Asn Leu Gly Leu Asp Cys  
 290 295 300  
 Asp Glu His Ser Ser Glu Ser Arg Cys Cys Arg Tyr Pro Leu Thr Val  
 305 310 315 320  
 Asp Phe Glu Ala Phe Gly Trp Asp Trp Ile Ile Ala Pro Lys Arg Tyr  
 325 330 335  
 Lys Ala Asn Tyr Cys Ser Gly Gln Cys Glu Tyr Met Phe Met Gln Lys  
 340 345 350  
 Tyr Pro His Thr His Leu Val Gln Gln Ala Asn Pro Arg Gly Ser Ala  
 355 360 365  
 Gly Pro Cys Cys Thr Pro Thr Lys Met Ser Pro Ile Asn Met Leu Tyr  
 370 375 380  
 Phe Asn Asp Lys Gln Gln Ile Ile Tyr Gly Lys Ile Pro Gly Met Val  
 385 390 395 400  
 Val Asp Arg Cys Gly Cys Ser  
 405

<210> 296

<211> 405

<212> PRT

<213> Mus musculus

<400> 296

Met Val Leu Ala Ala Pro Leu Leu Leu Gly Phe Leu Leu Leu Ala Leu  
 1 5 10 15  
 Glu Leu Arg Pro Arg Gly Glu Ala Ala Glu Gly Pro Ala Ala Ala Ala  
 20 25 30  
 Ala Ala Ala Ala Ala Ala Gly Val Gly Gly Glu Arg Ser Ser Arg  
 35 40 45  
 Pro Ala Pro Ser Ala Pro Pro Glu Pro Asp Gly Cys Pro Val Cys Val  
 50 55 60

Trp Arg Gln His Ser Arg Glu Leu Arg Leu Glu Ser Ile Lys Ser Gln  
 65 70 75 80  
 Ile Leu Ser Lys Leu Arg Leu Lys Glu Ala Pro Asn Ile Ser Arg Glu  
 85 90 95  
 Val Val Lys Gln Leu Leu Pro Lys Ala Pro Pro Leu Gln Gln Ile Leu  
 100 105 110  
 Asp Leu His Asp Phe Gln Gly Asp Ala Leu Gln Pro Glu Asp Phe Leu  
 115 120 125  
 Glu Glu Asp Glu Tyr His Ala Thr Thr Glu Thr Val Ile Ser Met Ala  
 130 135 140  
 Gln Glu Thr Asp Pro Ala Val Gln Thr Asp Gly Ser Pro Leu Cys Cys  
 145 150 155 160  
 His Phe His Phe Ser Pro Lys Val Met Phe Thr Lys Val Leu Lys Ala  
 165 170 175  
 Gln Leu Trp Val Tyr Leu Arg Pro Val Pro Arg Pro Ala Thr Val Tyr  
 180 185 190  
 Leu Gln Ile Leu Arg Leu Lys Pro Leu Thr Gly Glu Gly Thr Ala Gly  
 195 200 205  
 Gly Gly Gly Gly Gly Arg Arg His Ile Arg Ile Arg Ser Leu Lys Ile  
 210 215 220  
 Glu Leu His Ser Arg Ser Gly His Trp Gln Ser Ile Asp Phe Lys Gln  
 225 230 235 240  
 Val Leu His Ser Trp Phe Arg Gln Pro Gln Ser Asn Trp Gly Ile Glu  
 245 250 255  
 Ile Asn Ala Phe Asp Pro Ser Gly Thr Asp Leu Ala Val Thr Ser Leu  
 260 265 270  
 Gly Pro Gly Ala Glu Gly Leu His Pro Phe Met Glu Leu Arg Val Leu  
 275 280 285  
 Glu Asn Thr Lys Arg Ser Arg Arg Asn Leu Gly Leu Asp Cys Asp Glu  
 290 295 300  
 His Ser Ser Glu Ser Arg Cys Cys Arg Tyr Pro Leu Thr Val Asp Phe  
 305 310 315 320



Glu Ala Phe Gly Trp Asp Trp Ile Ile Ala Pro Lys Arg Tyr Lys Ala  
325 330 335

Asn Tyr Cys Ser Gly Gln Cys Glu Tyr Met Phe Met Gln Lys Tyr Pro  
340 345 350

His Thr His Leu Val Gln Gln Ala Asn Pro Arg Gly Ser Ala Gly Pro  
355 360 365

Cys Cys Thr Pro Thr Lys Met Ser Pro Ile Asn Met Leu Tyr Phe Asn  
370 375 380

Asp Lys Gln Gln Ile Ile Tyr Gly Lys Ile Pro Gly Met Val Val Asp  
385 390 395 400

Arg Cys Gly Cys Ser  
405

<210> 297

<211> 405

<212> PRT

<213> Mus musculus

<400> 297

Met Val Leu Ala Ala Pro Leu Leu Leu Gly Phe Leu Leu Leu Ala Leu  
1 5 10 15

Glu Leu Arg Pro Arg Gly Glu Ala Ala Glu Gly Pro Ala Ala Ala Ala  
20 25 30

Ala Ala Ala Ala Ala Ala Gly Val Gly Gly Glu Arg Ser Ser Arg  
35 40 45

Pro Ala Pro Ser Ala Pro Pro Glu Pro Asp Gly Cys Pro Val Cys Val  
50 55 60

Trp Arg Gln His Ser Arg Glu Leu Arg Leu Glu Ser Ile Lys Ser Gln  
65 70 75 80

Ile Leu Ser Lys Leu Arg Leu Lys Glu Ala Pro Asn Ile Ser Arg Glu  
85 90 95

Val Val Lys Gln Leu Leu Pro Lys Ala Pro Pro Leu Gln Gln Ile Leu  
100 105 110

Asp Leu His Asp Phe Gln Gly Asp Ala Leu Gln Pro Glu Asp Phe Leu

115	120	125
Glu Glu Asp Glu Tyr His Ala Thr Thr Glu Thr Val Ile Ser Met Ala		
130	135	140
Gln Glu Thr Asp Pro Ala Val Gln Thr Asp Gly Ser Pro Leu Cys Cys		
145	150	155 160
His Phe His Phe Ser Pro Lys Val Met Phe Asn Lys Val Leu Lys Ala		
	165 170	175
Gln Leu Trp Val Tyr Leu Arg Pro Val Pro Arg Pro Ala Thr Val Tyr		
	180 185	190
Leu Gln Ile Leu Arg Leu Lys Pro Leu Thr Gly Glu Gly Thr Ala Gly		
	195 200	205
Gly Gly Gly Gly Gly Arg Arg His Ile Arg Ile Arg Ser Leu Lys Ile		
	210 215	220
Glu Leu His Ser Arg Ser Gly His Trp Gln Ser Ile Asp Phe Lys Gln		
225	230 235	240
Val Leu His Ser Trp Phe Arg Gln Pro Gln Ser Asn Trp Gly Ile Glu		
	245 250	255
Ile Asn Ala Phe Asp Pro Ser Gly Thr Asp Leu Ala Val Thr Ser Leu		
	260 265	270
Gly Pro Gly Ala Glu Gly Leu His Pro Phe Met Glu Leu Arg Val Leu		
	275 280	285
Glu Asn Thr Lys Arg Ser Arg Arg Asn Leu Gly Leu Asp Cys Asp Glu		
290	295 300	
His Ser Ser Glu Ser Arg Cys Cys Arg Tyr Pro Leu Thr Val Asp Phe		
305	310 315	320
Glu Ala Phe Gly Trp Asp Trp Ile Ile Ala Pro Lys Arg Tyr Lys Ala		
	325 330	335
Asn Tyr Cys Ser Gly Gln Cys Glu Tyr Met Phe Met Gln Lys Tyr Pro		
	340 345	350
His Thr His Leu Val Gln Gln Ala Asn Pro Arg Gly Ser Ala Gly Pro		
	355 360	365
Cys Cys Thr Pro Thr Lys Met Ser Pro Ile Asn Met Leu Tyr Phe Asn		

370

375

380

Asp Lys Gln Gln Ile Ile Tyr Gly Lys Ile Pro Gly Met Val Val Asp  
 385 390 395 400

Arg Cys Gly Cys Ser  
 405

&lt;210&gt; 298

&lt;211&gt; 345

&lt;212&gt; PRT

&lt;213&gt; Rattus norvegicus

&lt;400&gt; 298

Pro Glu Pro Asp Gly Cys Pro Val Cys Val Trp Arg Gln His Ser Arg  
 1 5 10 15

Arg Val Arg Leu Gly Ser Ile Lys Ser Gln Ile Leu Ser Lys Leu Arg  
 20 25 30

Leu Lys Glu Ala Pro Asn Ile Ser Arg Glu Val Val Lys Gln Leu Leu  
 35 40 45

Pro Lys Ala Pro Pro Leu Gln Gln Ile Leu Asp Leu His Asp Phe Gln  
 50 55 60

Gly Asp Ala Leu Gln Pro Glu Asp Phe Leu Glu Glu Asp Glu Tyr His  
 65 70 75 80

Ala Thr Thr Glu Thr Val Ile Ser Met Ala Gln Glu Thr Asp Pro Ala  
 85 90 95

Val Gln Thr Asp Gly Ser Pro Leu Cys Cys His Phe His Phe Ser Pro  
 100 105 110

Lys Val Met Phe Thr Lys Val Leu Lys Ala Gln Leu Trp Val Tyr Leu  
 115 120 125

Arg Pro Val Pro Arg Pro Ala Thr Val Tyr Leu Gln Ile Leu Arg Leu  
 130 135 140

Lys Pro Leu Thr Gly Glu Gly Thr Ala Gly Gly Gly Gly Gly Gly Arg  
 145 150 155 160

Arg His Ile Arg Ile Arg Ser Leu Lys Ile Glu Leu His Ser Arg Ser  
 165 170 175

Gly His Trp Gln Ser Ile Asp Phe Lys Gln Val Leu His Ser Trp Phe  
 180 185 190  
 Arg Gln Pro Gln Ser Asn Trp Gly Ile Glu Ile Asn Ala Phe Asp Pro  
 195 200 205  
 Ser Gly Thr Asp Leu Ala Val Thr Ser Leu Gly Pro Gly Ala Glu Gly  
 210 215 220  
 Cys His Pro Phe Met Glu Leu Arg Val Leu Glu Asn Thr Lys Arg Ser  
 225 230 235 240  
 Arg Arg Asn Leu Gly Leu Asp Cys Asp Glu His Ser Ser Glu Ser Arg  
 245 250 255  
 Cys Cys Arg Tyr Pro Leu Thr Val Asp Phe Glu Ala Ser Gly Trp Asp  
 260 265 270  
 Trp Ile Ile Ala Pro Lys Arg Tyr Lys Ala Asn Tyr Cys Ser Gly Gln  
 275 280 285  
 Cys Glu Tyr Met Phe Met Gln Lys Tyr Pro His Thr His Leu Val Gln  
 290 295 300  
 Gln Ala Asn Pro Arg Gly Ser Ala Gly Pro Cys Cys Thr Pro Thr Lys  
 305 310 315 320  
 Met Ser Pro Ile Asn Met Leu Tyr Phe Asn Asp Lys Gln Gln Ile Ile  
 325 330 335  
 Tyr Gly Lys Ile Pro Gly Met Val Val  
 340 345

<210> 299  
 <211> 95  
 <212> PRT  
 <213> Homo sapiens

<400> 299  
 Cys Cys Arg Tyr Pro Leu Thr Val Asp Phe Glu Ala Phe Gly Trp Asp  
 1 5 10 15  
 Trp Ile Ile Ala Pro Lys Arg Tyr Lys Ala Asn Tyr Cys Ser Gly Gln  
 20 25 30  
 Cys Glu Tyr Met Phe Met Gln Lys Tyr Pro His Thr His Leu Val Gln  
 35 40 45

Gln Ala Asn Pro Arg Gly Ser Ala Gly Pro Cys Cys Thr Pro Thr Lys  
 50 55 60

Met Ser Pro Ile Asn Met Leu Tyr Phe Asn Asp Lys Gln Gln Ile Ile  
 65 70 75 80

Tyr Gly Lys Ile Pro Gly Met Val Val Asp Arg Cys Gly Cys Ser  
 85 90 95

<210> 300

<211> 102

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Transforming  
 growth factor beta like domain sequence

<400> 300

Cys Arg Arg His Asp Leu Tyr Val Asp Phe Lys Asp Leu Gly Trp Asp  
 1 5 10 15

Asp Trp Ile Ile Ala Pro Lys Gly Tyr Asn Ala Tyr Tyr Cys Glu Gly  
 20 25 30

Glu Cys Pro Phe Pro Leu Ser Glu Arg Leu Asn Ala Thr Asn His Ala  
 35 40 45

Ile Val Gln Ser Leu Val His Ala Leu Asp Pro Gly Ala Val Pro Lys  
 50 55 60

Pro Cys Cys Val Pro Thr Lys Leu Ser Pro Leu Ser Met Leu Tyr Tyr  
 65 70 75 80

Asp Asp Asp Gly Asn Val Val Leu Arg Asn Tyr Pro Asn Met Val Val  
 85 90 95

Glu Glu Cys Gly Cys Arg  
 100

<210> 301

<211> 102

<212> PRT

<213> Homo sapiens

<400> 301

Cys Arg Leu Arg Ser Leu Tyr Val Asp Phe Arg Asp Leu Gly Trp Gly  
1 5 10 15

Asp Trp Ile Ile Ala Pro Glu Gly Tyr Ile Ala Asn Tyr Cys Ser Gly  
20 25 30

Ser Cys Pro Phe Pro Leu Arg Asp Asp Leu Asn Leu Ser Asn His Ala  
35 40 45

Ile Leu Gln Thr Leu Val Arg Leu Arg Asn Pro Arg Ala Val Pro Gln  
50 55 60

Pro Cys Cys Val Pro Thr Lys Leu Ser Pro Leu Ser Met Leu Tyr Leu  
65 70 75 80

Asp Asp Asn Ser Asn Val Val Leu Arg Leu Tyr Pro Asn Met Ser Val  
85 90 95

Lys Glu Cys Gly Cys Arg  
100

<210> 302

<211> 105

<212> PRT

<213> Homo sapiens

<400> 302

Cys Pro Val Cys Val Trp Arg Gln His Ser Arg Glu Leu Arg Leu Glu  
1 5 10 15

Ser Ile Lys Ser Gln Ile Leu Ser Lys Leu Arg Leu Lys Glu Ala Pro  
20 25 30

Asn Ile Ser Arg Glu Val Val Lys Gln Leu Leu Pro Lys Ala Pro Pro  
35 40 45

Leu Gln Gln Ile Leu Asp Leu His Asp Phe Gln Gly Asp Ala Leu Gln  
50 55 60

Pro Glu Asp Phe Leu Glu Glu Asp Glu Tyr His Ala Thr Thr Glu Thr  
65 70 75 80

Val Ile Ser Met Ala Gln Glu Thr Asp Pro Ala Val Gln Thr Asp Gly  
85 90 95

Ser Pro Leu Cys Cys His Phe His Phe

100

105

<210> 303

<211> 105

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: TGF-beta  
propeptide domain sequence

<400> 303

Cys Arg Pro Leu Asp Leu Arg Arg Ser Gln Lys Gln Asp Arg Leu Glu  
1 5 10 15

Ala Ile Glu Gly Gln Ile Leu Ser Lys Leu Gly Leu Arg Arg Arg Pro  
20 25 30

Arg Pro Ser Lys Glu Pro Met Val Val Pro Glu Tyr Met Leu Asp Leu  
35 40 45

Tyr Asn Ala Leu Ser Glu Leu Glu Glu Gly Lys Val Gly Arg Val Pro  
50 55 60

Glu Ile Ser Asp Tyr Asp Gly Arg Glu Ala Gly Arg Ala Asn Thr Ile  
65 70 75 80

Arg Ser Phe Ser His Leu Glu Ser Asp Asp Phe Glu Glu Ser Thr Pro  
85 90 95

Glu Ser His Arg Lys Arg Phe Arg Phe  
100 105

<210> 304

<211> 404

<212> PRT

<213> Homo sapiens

<400> 304

Met Ser Val Lys Pro Ser Trp Gly Pro Gly Pro Ser Glu Gly Val Thr  
1 5 10 15

Ala Val Pro Thr Ser Asp Leu Gly Glu Ile His Asn Trp Thr Glu Leu  
20 25 30

Leu Asp Leu Phe Asn His Thr Leu Ser Glu Cys His Val Glu Leu Ser

35	40	45
Gln Ser Thr Lys Arg Val Val Leu Phe Ala Leu Tyr Leu Ala Met Phe		
50	55	60
Val Val Gly Leu Val Glu Asn Leu Leu Val Ile Cys Val Asn Trp Arg		
65	70	75 80
Gly Ser Gly Arg Ala Gly Leu Met Asn Leu Tyr Ile Leu Asn Met Ala		
85	90	95
Ile Ala Asp Leu Gly Ile Val Leu Ser Leu Pro Val Trp Met Leu Glu		
100	105	110
Val Thr Leu Asp Tyr Thr Trp Leu Trp Gly Ser Phe Ser Cys Arg Phe		
115	120	125
Thr His Tyr Phe Tyr Phe Val Asn Met Tyr Ser Ser Ile Phe Phe Leu		
130	135	140
Val Cys Leu Ser Val Asp Arg Tyr Val Thr Leu Thr Ser Ala Ser Pro		
145	150	155 160
Ser Trp Gln Arg Tyr Gln His Arg Val Arg Arg Ala Met Cys Ala Gly		
165	170	175
Ile Trp Val Leu Ser Ala Ile Ile Pro Leu Pro Glu Val Val His Ile		
180	185	190
Gln Leu Val Glu Gly Pro Glu Pro Met Cys Leu Phe Met Ala Pro Phe		
195	200	205
Glu Thr Tyr Ser Thr Trp Ala Leu Ala Val Ala Leu Ser Thr Thr Ile		
210	215	220
Leu Gly Phe Leu Leu Pro Phe Pro Leu Ile Thr Val Phe Asn Val Leu		
225	230	235 240
Thr Ala Cys Arg Leu Arg Gln Pro Gly Gln Pro Lys Ser Arg Arg His		
245	250	255
Cys Leu Leu Leu Cys Ala Tyr Val Ala Val Phe Val Met Cys Trp Leu		
260	265	270
Pro Tyr His Val Thr Leu Leu Leu Leu Thr Leu His Gly Thr His Ile		
275	280	285
Ser Leu His Cys His Leu Val His Leu Leu Tyr Phe Phe Tyr Asp Val		



290                      295                      300  
 Ile Asp Cys Phe Ser Met Leu His Cys Val Ile Asn Pro Ile Leu Tyr  
 305                      310                      315                      320  
 Asn Phe Leu Ser Pro His Phe Arg Gly Arg Leu Leu Asn Ala Val Val  
                          325                      330                      335  
 His Tyr Leu Pro Lys Asp Gln Thr Lys Ala Gly Thr Cys Ala Ser Ser  
                          340                      345                      350  
 Ser Ser Cys Ser Thr Gln His Ser Ile Ile Ile Thr Lys Gly Asp Ser  
                          355                      360                      365  
 Gln Pro Ala Ala Ala Ala Pro His Pro Glu Pro Ser Leu Ser Phe Gln  
                          370                      375                      380  
 Ala His His Leu Leu Pro Asn Thr Ser Pro Ile Ser Pro Thr Gln Pro  
 385                      390                      395                      400  
 Leu Thr Pro Ser

<210> 305  
 <211> 395  
 <212> PRT  
 <213> Mus musculus

<400> 305  
 Met Ser Val Ile Pro Ser Pro Arg Pro Val Ser Thr Leu Glu Pro Asp  
 1                      5                      10                      15  
 Asn Asp Phe Arg Asp Ile His Asn Trp Thr Glu Leu Leu His Leu Phe  
                          20                      25                      30  
 Asn Gln Thr Phe Thr Asp Cys His Ile Glu Phe Asn Glu Asn Thr Lys  
                          35                      40                      45  
 His Val Val Leu Phe Val Phe Tyr Leu Ala Ile Phe Val Val Gly Leu  
                          50                      55                      60  
 Val Glu Asn Val Leu Val Ile Cys Val Asn Cys Arg Arg Ser Gly Arg  
 65                      70                      75                      80  
 Val Gly Met Leu Asn Leu Tyr Ile Leu Asn Met Ala Ile Ala Asp Leu  
                          85                      90                      95

Gly Ile Ile Leu Ser Leu Pro Val Trp Met Leu Glu Val Met Leu Glu  
 100 105 110  
 Tyr Thr Trp Leu Trp Gly Ser Phe Ser Cys Arg Phe Ile His Tyr Phe  
 115 120 125  
 Tyr Leu Val Asn Met Tyr Ser Ser Ile Phe Phe Leu Thr Cys Leu Ser  
 130 135 140  
 Ile Asp Arg Tyr Val Thr Leu Thr Asn Thr Ser Pro Ser Trp Gln Arg  
 145 150 155 160  
 His Gln His Arg Ile Arg Arg Ala Val Cys Ala Gly Val Trp Val Leu  
 165 170 175  
 Ser Ala Ile Ile Pro Leu Pro Glu Val Val His Ile Gln Leu Leu Asp  
 180 185 190  
 Gly Ser Glu Pro Met Cys Leu Phe Leu Ala Pro Phe Glu Thr Tyr Ser  
 195 200 205  
 Ala Trp Ala Leu Ala Val Ala Leu Ser Ala Thr Ile Leu Gly Phe Leu  
 210 215 220  
 Leu Pro Phe Leu Leu Ile Ala Val Phe Asn Ile Leu Thr Ala Cys Arg  
 225 230 235 240  
 Leu Arg Arg Gln Arg Gln Thr Glu Ser Arg Arg His Cys Leu Leu Met  
 245 250 255  
 Trp Ala Tyr Ile Val Val Phe Ala Ile Cys Trp Leu Pro Tyr Gln Val  
 260 265 270  
 Thr Met Leu Leu Leu Thr Leu His Gly Thr His Ile Phe Leu His Cys  
 275 280 285  
 His Leu Val Asn Leu Leu Tyr Phe Phe Tyr Glu Ile Ile Asp Cys Phe  
 290 295 300  
 Ser Met Leu His Cys Val Ala Asn Pro Ile Leu Tyr Asn Phe Leu Ser  
 305 310 315 320  
 Pro Ser Phe Arg Gly Arg Leu Leu Ser Leu Val Val Arg Tyr Leu Pro  
 325 330 335  
 Lys Glu Gln Ala Arg Ala Ala Gly Gly Arg Ala Ser Ser Ser Ser Ser  
 340 345 350

Thr Gln His Ser Ile Ile Ile Thr Lys Glu Gly Ser Leu Pro Leu Gln  
 355 360 365  
 Arg Ile Ser Thr Pro Thr Pro Ser Glu Thr Phe Arg Arg Pro Leu Arg  
 370 375 380  
 Leu Gln Thr Pro His Leu His Ser Ala Ile Leu  
 385 390 395  
 <210> 306  
 <211> 398  
 <212> PRT  
 <213> Rattus norvegicus  
 <400> 306  
 Met Ser Val Ile Pro Ser Ser Arg Pro Val Ser Thr Leu Ala Pro Asp  
 1 5 10 15  
 Asn Asp Phe Arg Glu Ile His Asn Trp Thr Glu Leu Leu His Leu Phe  
 20 25 30  
 Asn Gln Thr Phe Ser Asp Cys Arg Met Glu Leu Asn Glu Asn Thr Lys  
 35 40 45  
 Gln Val Val Leu Phe Val Phe Tyr Leu Ala Ile Phe Val Val Gly Leu  
 50 55 60  
 Val Glu Asn Val Leu Val Ile Cys Val Asn Cys Arg Arg Ser Gly Arg  
 65 70 75 80  
 Val Gly Met Leu Asn Leu Tyr Ile Leu Asn Met Ala Val Ala Asp Leu  
 85 90 95  
 Gly Ile Ile Leu Ser Leu Pro Val Trp Met Leu Glu Val Met Leu Glu  
 100 105 110  
 Tyr Thr Trp Leu Trp Gly Ser Phe Ser Cys Arg Phe Ile His Tyr Phe  
 115 120 125  
 Tyr Leu Ala Asn Met Tyr Ser Ser Ile Phe Phe Leu Thr Cys Leu Ser  
 130 135 140  
 Ile Asp Arg Tyr Val Thr Leu Thr Asn Thr Ser Pro Ser Trp Gln Arg  
 145 150 155 160  
 His Gln His Arg Ile Arg Arg Ala Val Cys Ala Gly Val Trp Val Leu  
 165 170 175

Ser Ala Ile Ile Pro Leu Pro Glu Val Val His Ile Gln Leu Leu Asp  
 180 185 190  
 Gly Ser Glu Pro Met Cys Leu Phe Leu Ala Pro Phe Glu Thr Tyr Ser  
 195 200 205  
 Ala Trp Ala Leu Ala Val Ala Leu Ser Ala Thr Ile Leu Gly Phe Leu  
 210 215 220  
 Leu Pro Phe Pro Leu Ile Ala Val Phe Asn Ile Leu Ser Ala Cys Arg  
 225 230 235 240  
 Leu Arg Arg Gln Gly Gln Thr Glu Ser Arg Arg His Cys Leu Leu Met  
 245 250 255  
 Trp Ala Tyr Ile Val Val Phe Ala Ile Cys Trp Leu Pro Tyr His Val  
 260 265 270  
 Thr Met Leu Leu Leu Thr Leu His Thr Thr His Ile Phe Leu His Cys  
 275 280 285  
 Asn Leu Val Asn Phe Leu Tyr Phe Phe Tyr Glu Ile Thr Asp Cys Phe  
 290 295 300  
 Ser Met Leu His Cys Val Ala Asn Pro Ile Leu Tyr Asn Phe Leu Ser  
 305 310 315 320  
 Pro Ser Phe Arg Gly Arg Leu Leu Ser Leu Val Val Arg Tyr Leu Pro  
 325 330 335  
 Lys Glu Gln Ala Arg Ala Ala Gly Gly Arg Ala Ser Ser Ser Ser Ser  
 340 345 350  
 Thr Gln His Ser Ile Ile Ile Thr Lys Glu Gly Ser Leu Leu Ala Ala  
 355 360 365  
 Ala Asp Leu His Thr His Ala Ile Arg Asn Val Gln Ala Ser Ser Leu  
 370 375 380  
 Pro Pro Asn Thr Ser Pro Thr Leu Cys Asn Ser Ile Ala Ser  
 385 390 395

<210> 307

<211> 395

<212> PRT

<213> Rattus norvegicus

<400> 307

Met Ser Val Ile Pro Ser Ser Glu Ala Val Ser Thr Leu Ala Pro Asp  
1 5 10 15

Asn Asp Phe Arg Glu Ile His Asn Trp Thr Glu Leu Leu His Leu Phe  
20 25 30

Asn Gln Thr Phe Ser Asp Cys His Met Glu Leu Asn Glu Asn Thr Lys  
35 40 45

Gln Val Val Leu Phe Val Phe Tyr Leu Ala Ile Phe Val Val Gly Leu  
50 55 60

Val Glu Asn Val Leu Val Ile Cys Val Asn Cys Arg Arg Ser Gly Arg  
65 70 75 80

Val Gly Met Leu Asn Leu Tyr Ile Leu Asn Met Ala Val Ala Asp Leu  
85 90 95

Gly Ile Ile Leu Ser Leu Pro Val Trp Met Leu Glu Val Met Leu Glu  
100 105 110

Tyr Thr Trp Leu Trp Gly Ser Phe Ser Cys Arg Phe Ile His Tyr Phe  
115 120 125

Tyr Leu Ala Asn Met Tyr Ser Ser Ile Phe Phe Leu Thr Cys Leu Ser  
130 135 140

Ile Asp Arg Tyr Val Thr Leu Thr Asn Thr Ser Pro Ser Trp Gln Arg  
145 150 155 160

His Gln His Arg Ile Arg Arg Ala Val Cys Ala Gly Val Trp Val Leu  
165 170 175

Ser Ala Ile Ile Pro Leu Pro Glu Val Val His Ile Gln Leu Leu Asp  
180 185 190

Gly Ser Glu Pro Met Cys Leu Phe Leu Ala Pro Phe Glu Thr Tyr Ser  
195 200 205

Ala Trp Ala Leu Ala Val Ala Leu Ser Ala Thr Ile Leu Gly Phe Leu  
210 215 220

Leu Pro Phe Pro Leu Ile Ala Val Phe Asn Ile Leu Ser Ala Cys Arg  
225 230 235 240

Leu Arg Arg Gln Gly Gln Thr Glu Ser Arg Arg His Cys Leu Leu Met



Val Glu Asn Val Leu Val Ile Cys Val Asn Cys Arg Arg Ser Gly Arg  
 65 70 75 80  
 Val Gly Met Leu Asn Leu Tyr Ile Leu Asn Met Ala Val Ala Asp Leu  
 85 90 95  
 Gly Ile Ile Leu Ser Leu Pro Val Trp Met Leu Glu Val Met Leu Glu  
 100 105 110  
 Tyr Thr Trp Leu Trp Gly Ser Phe Ser Cys Arg Phe Ile His Tyr Phe  
 115 120 125  
 Tyr Leu Ala Asn Met Tyr Ser Ser Ile Phe Phe Leu Thr Cys Leu Ser  
 130 135 140  
 Ile Asp Arg Tyr Val Thr Leu Thr Asn Thr Ser Pro Ser Trp Gln Arg  
 145 150 155 160  
 His Gln His Arg Ile Arg Arg Ala Val Cys Ala Gly Val Trp Val Leu  
 165 170 175  
 Ser Ala Ile Ile Pro Leu Pro Glu Val Val His Ile Gln Leu Leu Asp  
 180 185 190  
 Gly Ser Glu Pro Met Cys Leu Phe Leu Ala Pro Phe Glu Thr Tyr Ser  
 195 200 205  
 Ala Trp Ala Leu Ala Val Ala Leu Ser Ala Thr Ile Leu Gly Phe Leu  
 210 215 220  
 Leu Pro Phe Pro Leu Ile Ala Val Phe Asn Ile Leu Ser Ala Cys Arg  
 225 230 235 240  
 Leu Arg Arg Gln Gly Gln Thr Glu Ser Arg Arg His Cys Leu Leu Met  
 245 250 255  
 Trp Ala Tyr Ile Val Val Phe Val Ile Cys Trp Leu Pro Tyr His Val  
 260 265 270  
 Thr Met Leu Leu Leu Thr Leu His Thr Thr His Ile Phe Leu His Cys  
 275 280 285  
 Asn Leu Val Asn Phe Leu Tyr Phe Phe Tyr Glu Ile Ile Asp Cys Phe  
 290 295 300  
 Ser Met Leu His Cys Val Ala Asn Pro Ile Leu Tyr Asn Phe Leu Ser  
 305 310 315 320

Pro Ser Phe Arg Gly Arg Leu Leu Ser Leu Val Val Arg Tyr Leu Pro  
325 330 335

Lys Glu Gln Ala Arg Ala Ala Gly Gly Arg Ala Ser Ser Ser Ser Ser  
340 345 350

Thr Gln His Ser Ile Ile Ile Thr Lys Glu Gly Ser Leu Pro Leu Gln  
355 360 365

Arg Ile Cys Thr Pro Thr Pro Ser Glu Thr Cys Arg Pro Pro Leu Cys  
370 375 380

Leu Arg Thr Pro His Leu His Ser Ala Ile Pro  
385 390 395

<210> 309

<211> 75

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: 7tm\_1: domain  
sequence

<400> 309

Gly Asn Leu Leu Val Ile Leu Val Ile Leu Arg Thr Lys Lys Leu Arg  
1 5 10 15

Thr Pro Thr Asn Ile Phe Ile Leu Asn Leu Ala Val Ala Asp Leu Leu  
20 25 30

Phe Leu Leu Thr Leu Pro Pro Trp Ala Leu Tyr Tyr Leu Val Gly Gly  
35 40 45

Ser Glu Asp Trp Pro Phe Gly Ser Ala Leu Cys Lys Leu Val Thr Ala  
50 55 60

Leu Asp Val Val Asn Met Tyr Ala Ser Ile Leu  
65 70 75

<210> 310

<211> 73

<212> PRT

<213> Homo sapiens

<400> 310



Glu Asn Leu Leu Val Ile Cys Val Asn Trp Arg Gly Ser Gly Arg Ala  
 1 5 10 15  
 Gly Leu Met Asn Leu Tyr Ile Leu Asn Met Ala Ile Ala Asp Leu Gly  
 20 25 30  
 Ile Val Leu Ser Leu Pro Val Trp Met Leu Glu Val Thr Leu Asp Tyr  
 35 40 45  
 Thr Trp Leu Trp Gly Ser Phe Ser Cys Arg Phe Thr His Tyr Phe Tyr  
 50 55 60  
 Phe Val Asn Met Tyr Ser Ser Ile Phe  
 65 70

<210> 311  
 <211> 87  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: 7tm\_1: domain  
 sequence

<400> 311  
 Phe Leu Leu Pro Leu Leu Val Ile Leu Val Cys Tyr Thr Arg Ile Leu  
 1 5 10 15  
 Arg Thr Leu Arg Lys Ala Ala Lys Thr Leu Leu Val Val Val Val Val  
 20 25 30  
 Phe Val Leu Cys Trp Leu Pro Tyr Phe Ile Val Leu Leu Leu Asp Thr  
 35 40 45  
 Leu Cys Leu Ser Ile Ile Met Ser Ser Thr Cys Glu Leu Glu Arg Val  
 50 55 60  
 Leu Pro Thr Ala Leu Leu Val Thr Leu Trp Leu Ala Tyr Val Asn Ser  
 65 70 75 80  
 Cys Leu Asn Pro Ile Ile Tyr  
 85

<210> 312  
 <211> 94  
 <212> PRT

<213> Homo sapiens

<400> 312

Phe Leu Leu Pro Phe Pro Leu Ile Thr Val Phe Asn Val Leu Thr Ala  
1 5 10 15

Cys Arg Leu Arg Gln Pro Gly Gln Pro Lys Ser Arg Arg His Cys Leu  
20 25 30

Leu Leu Cys Ala Tyr Val Ala Val Phe Val Met Cys Trp Leu Pro Tyr  
35 40 45

His Val Thr Leu Leu Leu Leu Thr Leu His Gly Thr His Ile Ser Leu  
50 55 60

His Cys His Leu Val His Leu Leu Tyr Phe Phe Tyr Asp Val Ile Asp  
65 70 75 80

Cys Phe Ser Met Leu His Cys Val Ile Asn Pro Ile Leu Tyr  
85 90

<210> 313

<211> 254

<212> PRT

<213> Homo sapiens

<400> 313

Gly Asn Leu Leu Val Ile Leu Val Ile Leu Arg Thr Lys Lys Leu Arg  
1 5 10 15

Thr Pro Thr Asn Ile Phe Leu Leu Asn Leu Ala Val Ala Asp Leu Leu  
20 25 30

Phe Leu Leu Thr Leu Pro Pro Trp Ala Leu Tyr Tyr Leu Val Gly Gly  
35 40 45

Asp Trp Val Phe Gly Asp Ala Leu Cys Lys Leu Val Gly Ala Leu Phe  
50 55 60

Val Val Asn Gly Tyr Ala Ser Ile Leu Leu Leu Thr Ala Ile Ser Ile  
65 70 75 80

Asp Arg Tyr Leu Ala Ile Val His Pro Leu Arg Tyr Arg Arg Ile Arg  
85 90 95

Thr Pro Arg Arg Ala Lys Val Leu Ile Leu Leu Val Trp Val Leu Ala  
100 105 110

Leu Leu Leu Ser Leu Pro Pro Leu Leu Phe Ser Trp Leu Arg Thr Val  
 115 120 125  
 Glu Glu Gly Asn Thr Thr Val Cys Leu Ile Asp Phe Pro Glu Glu Ser  
 130 135 140  
 Val Lys Arg Ser Tyr Val Leu Leu Ser Thr Leu Val Gly Phe Val Leu  
 145 150 155 160  
 Pro Leu Leu Val Ile Leu Val Cys Tyr Thr Arg Ile Leu Arg Thr Leu  
 165 170 175  
 Arg Lys Arg Ala Arg Ser Gln Arg Ser Leu Lys Arg Arg Ser Ser Ser  
 180 185 190  
 Glu Arg Lys Ala Ala Lys Met Leu Leu Val Val Val Val Val Phe Val  
 195 200 205  
 Leu Cys Trp Leu Pro Tyr His Ile Val Leu Leu Leu Asp Ser Leu Cys  
 210 215 220  
 Leu Leu Ser Ile Trp Arg Val Leu Pro Thr Ala Leu Leu Ile Thr Leu  
 225 230 235 240  
 Trp Leu Ala Tyr Val Asn Ser Cys Leu Asn Pro Ile Ile Tyr  
 245 250

<210> 314

<211> 254

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: 7tm\_1: domain  
sequence

<400> 314

Gly Asn Leu Leu Val Ile Leu Val Ile Leu Arg Thr Lys Lys Leu Arg  
 1 5 10 15  
 Thr Pro Thr Asn Ile Phe Leu Leu Asn Leu Ala Val Ala Asp Leu Leu  
 20 25 30  
 Phe Leu Leu Thr Leu Pro Pro Trp Ala Leu Tyr Tyr Leu Val Gly Gly  
 35 40 45

Asp Trp Val Phe Gly Asp Ala Leu Cys Lys Leu Val Gly Ala Leu Phe  
 50 55 60  
 Val Val Asn Gly Tyr Ala Ser Ile Leu Leu Leu Thr Ala Ile Ser Ile  
 65 70 75 80  
 Asp Arg Tyr Leu Ala Ile Val His Pro Leu Arg Tyr Arg Arg Ile Arg  
 85 90 95  
 Thr Pro Arg Arg Ala Lys Val Leu Ile Leu Leu Val Trp Val Leu Ala  
 100 105 110  
 Leu Leu Leu Ser Leu Pro Pro Leu Leu Phe Ser Trp Leu Arg Thr Val  
 115 120 125  
 Glu Glu Gly Asn Thr Thr Val Cys Leu Ile Asp Phe Pro Glu Glu Ser  
 130 135 140  
 Val Lys Arg Ser Tyr Val Leu Leu Ser Thr Leu Val Gly Phe Val Leu  
 145 150 155 160  
 Pro Leu Leu Val Ile Leu Val Cys Tyr Thr Arg Ile Leu Arg Thr Leu  
 165 170 175  
 Arg Lys Arg Ala Arg Ser Gln Arg Ser Leu Lys Arg Arg Ser Ser Ser  
 180 185 190  
 Glu Arg Lys Ala Ala Lys Met Leu Leu Val Val Val Val Val Phe Val  
 195 200 205  
 Leu Cys Trp Leu Pro Tyr His Ile Val Leu Leu Leu Asp Ser Leu Cys  
 210 215 220  
 Leu Leu Ser Ile Trp Arg Val Leu Pro Thr Ala Leu Leu Ile Thr Leu  
 225 230 235 240  
 Trp Leu Ala Tyr Val Asn Ser Cys Leu Asn Pro Ile Ile Tyr  
 245 250

<210> 315

<211> 173

<212> PRT

<213> Homo sapiens

<400> 315

Met Ala Arg Met Asn Arg Pro Ala Pro Val Glu Val Thr Tyr Lys Asn  
 1 5 10 15

Met Arg Phe Leu Ile Thr His Asn Pro Thr Asn Ala Thr Leu Asn Lys  
                   20                                  25                                  30  
 Phe Ile Glu Glu Leu Lys Lys Tyr Gly Val Thr Thr Ile Val Arg Val  
                   35                                  40                                  45  
 Cys Glu Ala Thr Tyr Asp Thr Thr Leu Val Glu Lys Glu Gly Ile His  
                   50                                  55                                  60  
 Val Leu Asp Trp Pro Phe Asp Asp Gly Ala Pro Pro Ser Asn Gln Ile  
                   65                                  70                                  75                                  80  
 Val Asp Asp Trp Leu Ser Leu Val Lys Ile Lys Phe Arg Glu Glu Pro  
                                   85                                  90                                  95  
 Gly Cys Cys Ile Ala Val His Cys Val Ala Gly Leu Gly Arg Ala Pro  
                                   100                                  105                                  110  
 Val Leu Val Ala Leu Ala Leu Ile Glu Gly Gly Met Lys Tyr Glu Asp  
                   115                                  120                                  125  
 Ala Val Gln Phe Ile Arg Gln Lys Arg Arg Gly Ala Phe Asn Ser Lys  
                   130                                  135                                  140  
 Gln Leu Leu Tyr Leu Glu Lys Tyr Arg Pro Lys Met Arg Leu Arg Phe  
                   145                                  150                                  155                                  160  
 Lys Asp Ser Asn Gly His Arg Asn Asn Cys Cys Ile Gln  
                                   165                                  170

<210> 316

<211> 173

<212> PRT

<213> Rattus norvegicus

<400> 316

Met Ala Arg Met Asn Arg Pro Ala Pro Val Glu Val Thr Tyr Lys Asn  
           1                                  5                                  10                                  15  
 Met Arg Phe Leu Ile Thr His Asn Pro Thr Asn Ala Thr Leu Asn Lys  
                   20                                  25                                  30  
 Phe Ile Glu Glu Leu Lys Lys Tyr Gly Val Thr Thr Ile Val Arg Val  
                   35                                  40                                  45  
 Cys Glu Ala Thr Tyr Asp Thr Thr Leu Val Glu Lys Glu Gly Ile His

50                      55                      60  
 Val Leu Asp Trp Pro Phe Asp Asp Gly Ala Pro Pro Ser Asn Gln Ile  
 65                      70                      75                      80  
 Val Asp Asp Trp Leu Ser Leu Val Lys Ile Lys Phe Arg Glu Glu Pro  
 85                      90                      95  
 Gly Cys Cys Ile Ala Val His Cys Val Ala Gly Leu Gly Arg Ala Pro  
 100                      105                      110  
 Val Leu Val Ala Leu Ala Leu Ile Glu Gly Gly Met Lys Tyr Glu Asp  
 115                      120                      125  
 Ala Val Gln Phe Ile Arg Gln Lys Arg Arg Gly Ala Phe Asn Ser Lys  
 130                      135                      140  
 Gln Leu Leu Tyr Leu Glu Lys Tyr Arg Pro Lys Met Arg Leu Arg Phe  
 145                      150                      155                      160  
 Lys Asp Ser Asn Gly His Arg Asn Asn Trp Cys Ile Gln  
 165                      170  
  
 <210> 317  
 <211> 167  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 317  
 Met Asn Arg Pro Ala Pro Val Glu Ile Ser Tyr Glu Asn Met Arg Phe  
 1                      5                      10                      15  
 Leu Ile Thr His Asn Pro Thr Asn Ala Thr Leu Asn Lys Phe Thr Glu  
 20                      25                      30  
 Glu Leu Lys Lys Tyr Gly Val Thr Thr Leu Val Arg Val Cys Asp Ala  
 35                      40                      45  
 Thr Tyr Asp Lys Ala Pro Val Glu Lys Glu Gly Ile His Val Leu Asp  
 50                      55                      60  
 Trp Pro Phe Asp Asp Gly Ala Pro Pro Pro Asn Gln Ile Val Asp Asp  
 65                      70                      75                      80  
 Trp Leu Asn Leu Leu Lys Thr Lys Phe Arg Glu Glu Pro Gly Cys Cys  
 85                      90                      95

Val Ala Val His Cys Val Ala Gly Leu Gly Arg Ala Pro Val Leu Val  
100 105 110

Ala Leu Ala Leu Ile Glu Cys Gly Met Lys Tyr Glu Asp Ala Val Gln  
115 120 125

Phe Ile Arg Gln Lys Arg Arg Gly Ala Phe Asn Ser Lys Gln Leu Leu  
130 135 140

Tyr Leu Glu Lys Tyr Arg Pro Lys Met Arg Leu Arg Phe Arg Asp Thr  
145 150 155 160

Asn Gly His Cys Cys Val Gln  
165

<210> 318

<211> 167

<212> PRT

<213> Homo sapiens

<400> 318

Met Asn Arg Pro Ala Pro Val Glu Ile Ser Tyr Glu Asp Met Arg Phe  
1 5 10 15

Leu Ile Thr His Asn Pro Thr Asn Ala Thr Leu Asn Lys Phe Thr Glu  
20 25 30

Glu Leu Lys Lys Tyr Gly Val Thr Thr Leu Val Arg Val Cys Asp Ala  
35 40 45

Thr Tyr Asp Lys Ala Pro Val Glu Lys Glu Gly Ile His Val Leu Asp  
50 55 60

Trp Pro Phe Asp Asp Gly Ala Pro Pro Pro Asn Gln Ile Val Asp Asp  
65 70 75 80

Trp Leu Asn Leu Leu Lys Thr Lys Phe Arg Glu Glu Pro Gly Cys Cys  
85 90 95

Val Ala Val His Cys Val Ala Gly Leu Gly Arg Ala Pro Val Leu Val  
100 105 110

Ala Leu Ala Leu Ile Glu Cys Gly Met Lys Tyr Glu Asp Ala Val Gln  
115 120 125

Phe Ile Arg Gln Lys Arg Arg Gly Ala Phe Asn Ser Lys Gln Leu Leu  
130 135 140

Tyr Leu Glu Lys Tyr Arg Pro Lys Met Arg Leu Arg Phe Arg Asp Thr  
 145 150 155 160

Asn Gly His Cys Cys Val Gln  
 165

<210> 319

<211> 167

<212> PRT

<213> Mus musculus

<400> 319

Met Asn Arg Pro Ala Pro Val Glu Ile Ser Tyr Glu Asn Met Arg Phe  
 1 5 10 15

Leu Ile Thr His Asn Pro Thr Asn Ala Thr Leu Asn Lys Phe Thr Glu  
 20 25 30

Glu Leu Lys Lys Tyr Gly Val Thr Thr Leu Val Arg Val Cys Asp Ala  
 35 40 45

Thr Tyr Asp Lys Ala Pro Val Glu Lys Glu Gly Ile His Val Leu Asp  
 50 55 60

Trp Pro Phe Asp Asp Gly Ala Pro Pro Pro Asn Gln Ile Val Asp Asp  
 65 70 75 80

Trp Leu Asn Leu Leu Lys Thr Leu Phe Arg Glu Glu Pro Gly Cys Cys  
 85 90 95

Val Ala Val His Cys Val Ala Gly Ile Gly Arg Ala Pro Val Leu Val  
 100 105 110

Ala Leu Ala Leu Ile Glu Cys Gly Met Lys Tyr Glu Asp Ala Val Gln  
 115 120 125

Phe Ile Arg Gln Lys Arg Arg Gly Ala Phe Asn Ser Lys Gln Leu Leu  
 130 135 140

Tyr Leu Glu Lys Tyr Arg Pro Lys Met Arg Leu Arg Phe Arg Asp Thr  
 145 150 155 160

Asn Gly His Cys Cys Val Gln  
 165



<210> 320  
<211> 130  
<212> PRT  
<213> Homo sapiens

<400> 320  
Pro Ile Thr His Asn Pro Thr Asn Val Thr Leu Asn Lys Phe Ile Glu  
1 5 10 15  
Glu Leu Lys Lys Tyr Gly Ala Thr Thr Ile Val Arg Val Cys Glu Ala  
20 25 30  
Thr Tyr Asp Thr Thr Leu Val Glu Lys Glu Gly Ile His Val Leu Asn  
35 40 45  
Trp Pro Phe Gly Asp Gly Ala Pro Pro Ser Asn Gln Ile Val Ala Asp  
50 55 60  
Trp Leu His Phe Val Lys Ile Lys Phe Cys Glu Glu Pro Gly Cys Tyr  
65 70 75 80  
Ile Ala Val Asn Cys Ile Val Gly Leu Gly Lys Ala Pro Val Leu Val  
85 90 95  
Ala Leu Ala Ser Val Glu Gly Gly Met Lys His Glu Asp Ala Val Gln  
100 105 110  
Phe Ile Gly Gln Lys Arg Ser Gly Ala Phe Lys Ser Lys Gln Leu Leu  
115 120 125  
Tyr Leu  
130

<210> 321  
<211> 134  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Y\_phosphatase  
domain sequence

<400> 321  
Ser Leu Thr Tyr Gly Asp Phe Thr Val Thr Cys Val Ser Val Glu Lys  
1 5 10 15  
Lys Lys Asp Asp Tyr Thr Val Arg Thr Leu Glu Leu Thr Asn Ser Gly

20 25 30  
 Asp Asp Glu Thr Arg Thr Val Lys His Tyr His Tyr Thr Gly Trp Pro  
 35 40 45  
 Asp His Gly Val Pro Glu Ser Pro Lys Ser Ile Leu Asp Leu Leu Arg  
 50 55 60  
 Lys Val Arg Lys Ser Lys Gly Thr Pro Asp Asp Gly Pro Ile Val Val  
 65 70 75 80  
 His Cys Ser Ala Gly Ile Gly Arg Thr Gly Thr Phe Ile Ala Ile Asp  
 85 90 95  
 Ile Leu Leu Gln Gln Leu Glu Lys Glu Gly Val Val Asp Val Phe Asp  
 100 105 110  
 Thr Val Lys Lys Leu Arg Ser Gln Arg Pro Gly Met Val Gln Thr Glu  
 115 120 125  
 Glu Gln Tyr Ile Phe Ile  
 130  
  
 <210> 322  
 <211> 90  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 322  
 His Val Leu Asn Trp Pro Phe Gly Asp Gly Ala Pro Pro Ser Asn Gln  
 1 5 10 15  
 Ile Val Ala Asp Trp Leu His Phe Val Lys Ile Lys Phe Cys Glu Glu  
 20 25 30  
 Pro Gly Cys Tyr Ile Ala Val Asn Cys Ile Val Gly Leu Gly Lys Ala  
 35 40 45  
 Pro Val Leu Val Ala Leu Ala Ser Val Glu Gly Gly Met Lys His Glu  
 50 55 60  
 Asp Ala Val Gln Phe Ile Gly Gln Lys Arg Ser Gly Ala Phe Lys Ser  
 65 70 75 80  
 Lys Gln Leu Leu Tyr Leu Glu Lys Tyr His  
 85 90

<210> 323  
<211> 98  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PTPc\_motif

<400> 323  
His Tyr Thr Gly Trp Pro Asp His Gly Val Pro Glu Ser Pro Asp Ser  
1 5 10 15  
Ile Leu Glu Phe Leu Arg Ala Val Lys Lys Ser Leu Asn Lys Ser Ala  
20 25 30  
Asn Asn Gly Pro Val Val Val His Cys Ser Ala Gly Val Gly Arg Thr  
35 40 45  
Gly Thr Phe Val Ala Ile Asp Ile Leu Leu Gln Gln Leu Glu Ala Gly  
50 55 60  
Thr Gly Glu Val Asp Ile Phe Asp Ile Val Lys Glu Leu Arg Ser Gln  
65 70 75 80  
Arg Pro Gly Ala Val Gln Thr Leu Glu Gln Tyr Leu Phe Leu Tyr Arg  
85 90 95  
Ala Leu

<210> 324  
<211> 355  
<212> PRT  
<213> Homo sapiens

<400> 324  
Met Ser Arg Gln Leu Ser Arg Ala Arg Pro Ala Thr Val Leu Gly Ala  
1 5 10 15  
Met Glu Met Gly Arg Arg Met Asp Ala Pro Thr Ser Ala Ala Val Thr  
20 25 30  
Arg Ala Phe Leu Glu Arg Gly His Thr Glu Ile Asp Thr Ala Phe Val  
35 40 45  
Tyr Ser Glu Gly Gln Ser Glu Thr Ile Leu Gly Gly Leu Gly Leu Arg





Gly Trp Ile Leu Pro Thr Val Tyr Gln Gly Met Tyr Asn Ala Ile Thr  
 165 170 175  
 Arg Gln Val Glu Thr Glu Leu Phe Pro Cys Leu Arg His Phe Gly Leu  
 180 185 190  
 Arg Phe Tyr Ala Phe Asn Pro Leu Ala Gly Gly Leu Leu Thr Gly Lys  
 195 200 205  
 Tyr Lys Tyr Glu Asp Lys Asp Gly Lys Gln Pro Val Gly Arg Phe Phe  
 210 215 220  
 Gly Asn Thr Trp Ala Glu Met Tyr Arg Asn Arg Tyr Trp Lys Glu His  
 225 230 235 240  
 His Phe Glu Gly Ile Ala Leu Val Glu Lys Ala Leu Gln Ala Ala Tyr  
 245 250 255  
 Gly Ala Ser Ala Pro Ser Met Thr Ser Ala Thr Leu Arg Trp Met Tyr  
 260 265 270  
 His His Ser Gln Leu Gln Gly Ala His Gly Asp Ala Val Ile Leu Gly  
 275 280 285  
 Met Ser Ser Leu Glu Gln Leu Glu Gln Asn Leu Ala Ala Ala Glu Glu  
 290 295 300  
 Gly Pro Leu Glu Pro Ala Val Val Asp Ala Phe Asn Gln Ala Trp His  
 305 310 315 320  
 Leu Val Ala His Glu Cys Pro Asn Tyr Phe Arg  
 325 330

<210> 326

<211> 331

<212> PRT

<213> Homo sapiens

<400> 326

Met Ser Arg Gln Leu Ser Arg Ala Arg Pro Ala Thr Val Leu Gly Ala  
 1 5 10 15

Met Glu Met Gly Arg Arg Met Asp Ala Pro Thr Ser Ala Ala Val Thr  
 20 25 30

Arg Ala Phe Leu Glu Arg Gly His Thr Glu Ile Asp Thr Ala Phe Val  
 35 40 45

Tyr Ser Glu Gly Gln Ser Glu Thr Ile Leu Gly Gly Leu Gly Leu Arg  
50 55 60  
Leu Gly Gly Ser Asp Cys Arg Val Lys Ile Asp Thr Lys Ala Ile Pro  
65 70 75 80  
Leu Phe Gly Asn Ser Leu Lys Pro Asp Ser Leu Arg Phe Gln Leu Glu  
85 90 95  
Thr Ser Leu Lys Arg Leu Gln Cys Pro Arg Val Asp Leu Phe Tyr Leu  
100 105 110  
His Met Pro Asp His Ser Thr Pro Val Glu Glu Thr Leu Arg Ala Cys  
115 120 125  
His Gln Leu His Gln Glu Gly Lys Phe Val Glu Leu Gly Leu Ser Asn  
130 135 140  
Tyr Ala Ala Trp Glu Val Ala Glu Ile Cys Thr Leu Cys Lys Ser Asn  
145 150 155 160  
Gly Trp Ile Leu Pro Thr Val Tyr Gln Gly Met Tyr Asn Ala Ile Thr  
165 170 175  
Arg Gln Val Glu Thr Glu Leu Phe Pro Cys Leu Arg His Phe Gly Leu  
180 185 190  
Arg Phe Tyr Ala Phe Asn Pro Leu Ala Gly Gly Leu Leu Thr Gly Lys  
195 200 205  
Tyr Lys Tyr Glu Asp Lys Asn Gly Lys Gln Pro Val Gly Arg Phe Phe  
210 215 220  
Gly Asn Thr Trp Ala Glu Met Tyr Arg Asn Arg Tyr Trp Lys Glu His  
225 230 235 240  
His Phe Glu Gly Ile Ala Leu Val Glu Lys Ala Leu Gln Ala Ala Tyr  
245 250 255  
Gly Ala Ser Ala Pro Ser Met Thr Ser Ala Thr Leu Arg Trp Met Tyr  
260 265 270  
His His Ser Gln Leu Gln Gly Ala His Gly Asp Ala Val Ile Leu Gly  
275 280 285  
Met Ser Ser Leu Glu Gln Leu Glu Gln Asn Leu Ala Ala Ala Glu Glu  
290 295 300

Gly Pro Leu Glu Pro Ala Val Val Asp Ala Phe Asn Gln Ala Trp His  
 305 310 315 320

Leu Val Thr His Glu Cys Pro Asn Tyr Phe Arg  
 325 330

<210> 327

<211> 331

<212> PRT

<213> Homo sapiens

<400> 327

Met Ser Arg Gln Leu Ser Arg Ala Arg Pro Ala Thr Val Leu Gly Ala  
 1 5 10 15

Met Glu Met Gly Arg Arg Met Asp Ala Pro Thr Ser Ala Ala Val Thr  
 20 25 30

Arg Ala Phe Leu Glu Arg Gly His Thr Glu Ile Asp Thr Ala Phe Val  
 35 40 45

Tyr Ser Glu Gly Gln Ser Glu Thr Ile Leu Gly Gly Leu Gly Leu Arg  
 50 55 60

Leu Gly Gly Ser Asp Cys Arg Val Lys Ile Asp Thr Lys Ala Ile Pro  
 65 70 75 80

Leu Phe Gly Asn Ser Leu Lys Pro Asp Ser Leu Arg Phe Gln Leu Glu  
 85 90 95

Thr Ser Leu Lys Arg Leu Gln Cys Pro Arg Val Asp Leu Phe Tyr Leu  
 100 105 110

His Met Pro Asp His Ser Thr Pro Val Glu Glu Thr Leu Arg Ala Cys  
 115 120 125

His Gln Leu His Gln Glu Gly Lys Phe Val Glu Leu Gly Leu Ser Asn  
 130 135 140

Tyr Ala Ala Trp Glu Val Ala Glu Ile Cys Thr Leu Cys Lys Ser Asn  
 145 150 155 160

Gly Trp Ile Leu Pro Thr Val Tyr Gln Gly Met Tyr Asn Ala Ile Thr  
 165 170 175

Arg Gln Val Glu Thr Glu Leu Phe Pro Cys Leu Arg His Phe Gly Leu



180 185 190  
 Arg Phe Tyr Ala Phe Asn Pro Leu Ala Gly Gly Leu Leu Thr Gly Lys  
 195 200 205  
 Tyr Lys Tyr Glu Asp Lys Asn Gly Lys Gln Pro Val Gly Arg Phe Phe  
 210 215 220  
 Gly Asn Thr Trp Ala Glu Met Tyr Arg Asn Arg Tyr Trp Lys Glu His  
 225 230 235 240  
 His Phe Glu Gly Ile Ala Leu Val Glu Lys Ala Leu Gln Ala Ala Tyr  
 245 250 255  
 Gly Ala Ser Ala Pro Ser Met Thr Ser Ala Thr Leu Arg Trp Met Tyr  
 260 265 270  
 His His Ser Gln Leu Gln Gly Ala His Gly Asp Ala Val Ile Leu Gly  
 275 280 285  
 Met Ser Ser Leu Glu Gln Leu Glu Gln Asn Leu Ala Ala Ala Glu Glu  
 290 295 300  
 Gly Pro Leu Glu Pro Ala Val Val Asp Ala Phe Asn Gln Ala Trp His  
 305 310 315 320  
 Leu Val Thr His Glu Cys Pro Asn Tyr Phe Arg  
 325 330  
  
 <210> 328  
 <211> 330  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 328  
 Met Ser Arg Pro Pro Pro Pro Arg Val Ala Ser Val Leu Gly Thr Met  
 1 5 10 15  
 Glu Met Gly Arg Arg Met Asp Ala Pro Ala Ser Ala Ala Val Arg  
 20 25 30  
 Ala Phe Leu Glu Arg Gly His Thr Glu Leu Asp Thr Ala Phe Met Tyr  
 35 40 45  
 Ser Asp Gly Gln Ser Glu Thr Ile Leu Gly Gly Leu Gly Leu Gly Leu  
 50 55 60

Gly Gly Gly Asp Cys Arg Val Lys Ile Ala Thr Lys Ala Asn Pro Trp  
 65 70 75 80

Asp Gly Lys Ser Leu Lys Pro Asp Ser Val Arg Ser Gln Leu Glu Thr  
 85 90 95

Ser Leu Lys Arg Leu Gln Cys Pro Gln Val Asp Leu Phe Tyr Leu His  
 100 105 110

Thr Pro Asp His Gly Thr Pro Val Glu Glu Thr Leu His Ala Cys Gln  
 115 120 125

Arg Leu His Gln Glu Gly Lys Phe Val Glu Leu Gly Leu Ser Asn Tyr  
 130 135 140

Ala Ser Trp Glu Val Ala Glu Ile Cys Thr Leu Cys Lys Ser Asn Gly  
 145 150 155 160

Trp Ile Leu Pro Thr Val Tyr Gln Gly Met Tyr Asn Ala Thr Thr Arg  
 165 170 175

Gln Val Glu Thr Glu Leu Phe Pro Cys Leu Arg His Phe Gly Leu Arg  
 180 185 190

Phe Tyr Ala Tyr Asn Pro Leu Ala Gly Gly Leu Leu Thr Gly Lys Tyr  
 195 200 205

Lys Tyr Glu Asp Lys Asp Gly Lys Gln Pro Val Gly Arg Phe Phe Gly  
 210 215 220

Asn Ser Trp Ala Glu Thr Tyr Arg Asn Arg Phe Trp Lys Glu His His  
 225 230 235 240

Phe Glu Ala Ile Ala Leu Val Glu Lys Ala Leu Gln Ala Ala Tyr Gly  
 245 250 255

Ala Ser Ala Pro Ser Val Thr Ser Ala Ala Leu Arg Trp Met Tyr His  
 260 265 270

His Ser Gln Leu Gln Gly Ala His Gly Asp Ala Val Ile Leu Gly Met  
 275 280 285

Ser Ser Leu Glu Gln Leu Glu Gln Asn Leu Ala Ala Thr Glu Glu Gly  
 290 295 300

Pro Leu Glu Pro Ala Val Val Asp Ala Phe Asn Gln Ala Trp His Leu  
 305 310 315 320

Val Ala His Glu Cys Pro Asn Tyr Phe Arg  
 325 330

<210> 329

<211> 306

<212> PRT

<213> Homo sapiens

<400> 329

Pro Ala Thr Val Leu Gly Ala Met Glu Met Gly Arg Arg Met Asp Ala  
 1 5 10 15

Pro Thr Ser Ala Ala Val Thr Arg Ala Phe Leu Glu Arg Gly His Thr  
 20 25 30

Glu Ile Asp Thr Ala Phe Leu Tyr Ser Asp Gly Gln Ser Glu Thr Ile  
 35 40 45

Leu Gly Gly Leu Gly Leu Arg Met Gly Ser Ser Asp Cys Arg Val Lys  
 50 55 60

Ile Ala Thr Lys Ala Asn Pro Trp Ile Gly Asn Ser Leu Lys Pro Asp  
 65 70 75 80

Ser Val Arg Ser Gln Leu Glu Thr Ser Leu Lys Arg Leu Gln Cys Pro  
 85 90 95

Arg Val Asp Leu Phe Tyr Leu His Ala Pro Asp His Ser Ala Pro Val  
 100 105 110

Glu Glu Thr Leu Arg Ala Cys His Gln Leu His Gln Glu Gly Lys Phe  
 115 120 125

Val Glu Leu Gly Leu Ser Asn Tyr Ala Ala Trp Glu Val Ala Glu Ile  
 130 135 140

Cys Thr Leu Cys Lys Ser Asn Gly Trp Ile Leu Pro Thr Val Tyr Gln  
 145 150 155 160

Gly Met Tyr Ser Ala Thr Thr Arg Gln Val Glu Thr Glu Leu Phe Pro  
 165 170 175

Cys Leu Arg His Phe Gly Leu Arg Phe Tyr Ala Tyr Asn Pro Leu Ala  
 180 185 190

Asp Gln Ser Pro Glu Gly Cys Gly Ser Phe Trp Gly Thr Leu Gly Pro  
 195 200 205

Gly Ala Asp Cys Cys Leu Pro Ala Gly Gly Leu Leu Thr Gly Lys Tyr  
 210 215 220  
 Lys Tyr Glu Asp Lys Asp Gly Lys Gln Pro Val Gly Arg Phe Phe Gly  
 225 230 235 240  
 Thr Gln Trp Ala Glu Ile Tyr Arg Asn Gln Phe Trp Lys Glu His His  
 245 250 255  
 Phe Glu Gly Ile Ala Leu Val Glu Lys Ala Leu Gln Ala Ala Tyr Gly  
 260 265 270  
 Ala Ser Ala Pro Ser Met Thr Ser Ala Ala Leu Arg Trp Met Tyr His  
 275 280 285  
 His Ser Gln Leu Gln Gly Ala His Gly Asp Ala Val Ile Leu Gly Met  
 290 295 300  
 Ser Ser  
 305

<210> 330

<211> 245

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Aldo/keto  
 reductase family domain sequence

<400> 330

Pro Leu Leu Gly Leu Gly Thr Trp Lys Thr Pro Gly Arg Val Asp Asp  
 1 5 10 15  
 Glu Glu Ala Phe Glu Ala Val Lys Ala Ala Leu Asp Ala Gly Tyr Arg  
 20 25 30  
 His Phe Asp Thr Ala Glu Ile Tyr Gly Asn Glu Glu Glu Val Gly Glu  
 35 40 45  
 Ala Ile Lys Glu Ala Leu Phe Glu Gly Ser Gly Val Val Arg Glu Asp  
 50 55 60  
 Ile Phe Ile Thr Ser Lys Leu Trp Asn Thr Phe His Ser Pro Lys His  
 65 70 75 80



Glu Glu Val Glu Glu Gly Ala Val Tyr His Val Thr Leu Lys Arg Val  
                   20                                  25                                  30

Gln Ile Gln Gln Ala Ala Asn Lys Gly Ala Arg Trp Leu Gly Val Glu  
                   35                                  40                                  45

Gly Asp Gln Leu Pro Pro Gly His Thr Val Ser Gln Tyr Glu Thr Cys  
                   50                                  55                                  60

Lys Ile Arg Thr Ile Lys Ala Gly Thr Leu Glu Lys Leu Val Glu Asn  
                   65                                  70                                  75                                  80

Leu Leu Thr Ala Phe Gly Asp Asn Asp Phe Thr Tyr Ile Ser Ile Phe  
                                   85                                  90                                  95

Leu Ser Thr Tyr Arg Gly Phe Ala Ser Thr Lys Glu Val Leu Glu Leu  
                                   100                                  105                                  110

Leu Leu Asp Arg Tyr Gly Asn Leu Thr Ser Pro Asn Cys Glu Glu Asp  
                                   115                                  120                                  125

Gly Ser Gln Ser Ser Ser Glu Ser Lys Met Val Ile Arg Asn Ala Ile  
                                   130                                  135                                  140

Ala Ser Ile Leu Arg Ala Trp Leu Asp Gln Cys Ala Glu Asp Phe Arg  
                                   145                                  150                                  155                                  160

Glu Pro Pro His Phe Pro Cys Leu Gln Lys Leu Leu Asp Tyr Leu Thr  
                                   165                                  170                                  175

Arg Met Met Pro Gly Ser Asp Pro Glu Arg Arg Ala Gln Asn Leu Leu  
                                   180                                  185                                  190

Glu Gln Phe Gln Lys Gln Glu Val Glu Thr Asp Asn Gly Leu Pro Asn  
                                   195                                  200                                  205

Thr Ile Ser Phe Ser Leu Glu Glu Glu Glu Leu Glu Gly Gly Glu  
                                   210                                  215                                  220

Ser Ala Glu Phe Thr Cys Phe Ser Glu Asp Leu Val Ala Glu Gln Leu  
                                   225                                  230                                  235                                  240

Thr Tyr Met Asp Ala Gln Leu Phe Lys Lys Val Val Pro His His Cys  
                                   245                                  250                                  255

Leu Gly Cys Ile Trp Ser Arg Arg Asp Lys Lys Glu Asn Lys His Leu  
                                   260                                  265                                  270

Ala Pro Thr Ile Arg Ala Thr Ile Ser Gln Phe Asn Thr Leu Thr Lys  
 275 280 285  
 Cys Val Val Ser Thr Ile Leu Gly Gly Lys Glu Leu Lys Thr Gln Gln  
 290 295 300  
 Arg Ala Lys Ile Ile Glu Lys Trp Ile Asn Ile Ala His Glu Cys Arg  
 305 310 315 320  
 Leu Leu Lys Asn Phe Ser Ser Leu Arg Ala Ile Val Ser Ala Leu Gln  
 325 330 335  
 Ser Asn Ser Ile Tyr Arg Leu Lys Lys Thr Trp Ala Ala Val Pro Arg  
 340 345 350  
 Asp Arg Met Leu Met Phe Glu Glu Leu Ser Asp Ile Phe Ser Asp His  
 355 360 365  
 Asn Asn His Leu Thr Ser Arg Glu Leu Leu Met Lys Glu Gly Thr Ser  
 370 375 380  
 Lys Phe Ala Asn Leu Asp Ser Ser Val Lys Glu Asn Gln Lys Arg Thr  
 385 390 395 400  
 Gln Arg Arg Leu Gln Leu Gln Lys Asp Met Gly Val Met Gln Gly Thr  
 405 410 415  
 Val Pro Tyr Leu Gly Thr Phe Leu Thr Asp Leu Thr Met Leu Asp Thr  
 420 425 430  
 Ala Leu Gln Asp Tyr Ile Glu Gly Gly Leu Ile Asn Phe Glu Lys Arg  
 435 440 445  
 Arg Arg Glu Phe Glu Val Ile Ala Gln Ile Lys Leu Leu Gln Ser Ala  
 450 455 460  
 Cys Asn Ser Tyr Cys Met Thr Pro Asp Gln Lys Phe Ile Gln Trp Phe  
 465 470 475 480  
 Gln Arg Gln Gln Leu Leu Thr Glu Glu Glu Ser Tyr Ala Leu Ser Cys  
 485 490 495  
 Glu Ile Glu Ala Ala Ala Asp Ala Ser Thr Thr Ser Pro Lys Pro Arg  
 500 505 510  
 Lys Ser Met Val Lys Arg Leu Ser Leu Leu Phe Leu Gly Ser Asp Met  
 515 520 525

Ile	Thr	Ser	Pro	Thr	Pro	Thr	Lys	Glu	Gln	Pro	Lys	Ser	Thr	Ala	Ser	530	535	540	
Gly	Ser	Ser	Gly	Glu	Ser	Met	Asp	Ser	Val	Ser	Val	Ser	Ser	Cys	Glu	545	550	555	560
Ser	Asn	His	Ser	Glu	Ala	Glu	Glu	Gly	Ser	Ile	Thr	Pro	Met	Asp	Thr	565	570	575	
Pro	Asp	Glu	Pro	Gln	Lys	Lys	Leu	Ser	Glu	Ser	Ser	Ser	Ser	Cys	Ser	580	585	590	
Ser	Ile	His	Ser	Met	Asp	Thr	Asn	Ser	Ser	Gly	Met	Ser	Ser	Leu	Ile	595	600	605	
Asn	Pro	Leu	Ser	Ser	Pro	Pro	Ser	Cys	Asn	Asn	Asn	Pro	Lys	Ile	His	610	615	620	
Lys	Arg	Ser	Val	Ser	Val	Thr	Ser	Ile	Thr	Ser	Thr	Val	Leu	Pro	Pro	625	630	635	640
Val	Tyr	Asn	Gln	Gln	Asn	Glu	Asp	Thr	Cys	Ile	Ile	Arg	Ile	Ser	Val	645	650	655	
Glu	Asp	Asn	Asn	Gly	Asn	Met	Tyr	Lys	Ser	Ile	Met	Leu	Thr	Ser	Gln	660	665	670	
Asp	Lys	Thr	Pro	Ala	Val	Ile	Gln	Arg	Ala	Met	Leu	Lys	His	Asn	Leu	675	680	685	
Asp	Ser	Asp	Pro	Ala	Glu	Glu	Tyr	Glu	Leu	Val	Gln	Val	Ile	Ser	Glu	690	695	700	
Asp	Lys	Glu	Leu	Val	Ile	Pro	Asp	Ser	Ala	Asn	Val	Phe	Tyr	Ala	Met	705	710	715	720
Asn	Ser	Gln	Val	Asn	Phe	Asp	Phe	Ile	Leu	Arg	Lys	Lys	Asn	Ser	Met	725	730	735	
Glu	Glu	Gln	Val	Lys	Leu	Arg	Ser	Arg	Thr	Ser	Leu	Thr	Leu	Pro	Arg	740	745	750	
Thr	Ala	Lys	Arg	Gly	Cys	Trp	Ser	Xaa	Arg	His	Ser	Lys	Ile	Thr	Leu	755	760	765	



<210> 332  
 <211> 709  
 <212> PRT  
 <213> Mus musculus

<400> 332  
 Met Glu Arg Thr Ala Gly Lys Glu Leu Ala Leu Ala Pro Leu Gln Asp  
 1 5 10 15  
 Trp Gly Glu Glu Thr Glu Asp Gly Ala Val Tyr Ser Val Ser Leu Arg  
 20 25 30  
 Arg Gln Arg Ser Gln Arg Ser Thr Pro Glu Arg Ser Gly Glu Gly Gln  
 35 40 45  
 Thr Pro Ile Pro Ala Thr Asp Thr Phe Leu His Tyr Arg Thr Ser Lys  
 50 55 60  
 Val Arg Ala Leu Arg Ala Ala Arg Leu Glu Arg Leu Val His Glu Leu  
 65 70 75 80  
 Val Ser Gly Asp Arg Glu Gln Asp Pro Gly Phe Val Pro Ala Phe Leu  
 85 90 95  
 Ala Thr His Arg Ala Phe Val Pro Thr Ala Arg Val Leu Gly Phe Leu  
 100 105 110  
 Leu Pro Pro Pro Pro Pro Pro Pro Pro Pro Ala Gly Val Asp Ser  
 115 120 125  
 Lys Arg Thr Glu Gly Gln Asp Leu Asn Phe Ser Lys Asn Leu Arg Ala  
 130 135 140  
 Val Val Ser Val Leu Gly Ser Trp Leu Arg Asn His Pro Gln Asp Phe  
 145 150 155 160  
 Arg Asp Pro Pro Asp His Gln Asn Leu Gly Asn Val Arg Ile Phe Leu  
 165 170 175  
 Gly Trp Val Ala Pro Gly Gly Ala Glu Ala Arg Glu Ala Glu Lys Leu  
 180 185 190  
 Leu Glu Asp Phe Leu Lys Glu Ala Lys Gly Glu Gln Thr Glu Glu Glu  
 195 200 205  
 Lys Arg Leu Ala Trp Ser Gly Pro Pro Arg Ile Ala Gln Thr Pro Gly  
 210 215 220

Ser Glu Phe Ala Glu Asp Cys Val Glu Glu Glu Gly Pro Ser Ser Glu  
 225 230 235 240  
 Gly Pro Glu Leu Leu Asp Phe Ser Val Asp Asp Val Ala Glu Gln Leu  
 245 250 255  
 Thr Leu Met Asp Val Glu Leu Phe Leu Arg Val Arg Ser Cys Glu Cys  
 260 265 270  
 Leu Gly Ser Met Trp Ser Gln Arg Asp Arg Pro Gly Ala Ala Gly Ile  
 275 280 285  
 Ser Pro Thr Val Arg Ala Thr Val Ala Gln Phe Asn Thr Val Thr Gly  
 290 295 300  
 Cys Val Leu Gly Ser Val Leu Ala Ala Pro Gly Leu Ala Ala Ser Gln  
 305 310 315 320  
 Arg Ala Gln Arg Ile Glu Lys Trp Ile Arg Ile Ala Gln Arg Cys Arg  
 325 330 335  
 Glu Leu Arg Asn Phe Ser Ser Leu Arg Ala Ile Leu Ser Ala Leu Gln  
 340 345 350  
 Ser Asn Pro Ile Tyr Arg Leu Lys Arg Ser Trp Gly Ala Val Ser Arg  
 355 360 365  
 Glu Pro Leu Ser Val Phe Arg Lys Leu Ser Gln Ile Phe Ser Asp Glu  
 370 375 380  
 Asp Asn His Leu Ser Ser Arg Ala Ile Leu Ser Gln Glu Glu Thr Thr  
 385 390 395 400  
 Glu Asp Asp Asp Cys Pro Ser Gly Ser Leu Pro Ser Lys Leu Pro Pro  
 405 410 415  
 Gly Pro Val Pro Tyr Leu Gly Thr Phe Leu Thr Asp Leu Val Met Leu  
 420 425 430  
 Asp Thr Ala Leu Pro Asp Thr Leu Lys Gly Asn Leu Ile Asn Phe Glu  
 435 440 445  
 Lys Arg Arg Lys Glu Trp Glu Ile Leu Ala Arg Ile Gln Gln Leu Gln  
 450 455 460  
 Gln Arg Cys Gln Arg Tyr Ser Leu Ser Pro Arg Pro Pro Ile Leu Ala  
 465 470 475 480

Ala Leu Arg Ala Gln Arg Gln Leu Ser Glu Glu Gln Ser Tyr Arg Val  
 485 490 495  
 Ser Arg Val Ile Glu Pro Pro Ala Ala Ser Cys Pro Ser Ser Pro Arg  
 500 505 510  
 Ile Arg Arg Arg Ile Ser Leu Thr Lys Arg Leu Ser Ala Lys Leu Ser  
 515 520 525  
 Arg Glu Lys Asn Ser Ser Pro Gly Gly Ser Pro Gly Asp Pro Ser Ser  
 530 535 540  
 Pro Thr Ser Ser Val Ser Pro Gly Ser Pro Pro Ser Ser Pro Arg Asn  
 545 550 555 560  
 Arg Glu Pro Pro Pro Pro Gly Ser Pro Pro Ala Ser Pro Gly Pro Gln  
 565 570 575  
 Ser Pro Ser Thr Lys Leu Ser Leu Thr Met Asp Pro Pro Gly Pro Trp  
 580 585 590  
 Pro Val Thr Leu Thr Pro Ser Ser Ser Arg Val Pro Leu Leu Gly Gln  
 595 600 605  
 Gln Thr Ser Glu Ala Arg Val Ile Arg Val Ser Ile Asn Asn Asn His  
 610 615 620  
 Gly Asn Leu Tyr Arg Ser Ile Leu Leu Thr Cys Gln Asp Lys Ala Pro  
 625 630 635 640  
 Ser Val Val Gln Arg Ala Leu Glu Lys His Asn Val Pro Gln Pro Trp  
 645 650 655  
 Ala Arg Asp Tyr Gln Leu Phe Gln Val Leu Pro Gly Asp Arg Glu Leu  
 660 665 670  
 Leu Ile Pro Asp Gly Ala Asn Val Phe Tyr Ala Met Ser Pro Ala Ala  
 675 680 685  
 Pro Gly Asp Phe Leu Leu Arg Arg Lys Glu Gly Thr Gly His Thr Leu  
 690 695 700  
 Ser Ala Ser Pro Thr  
 705

<210> 333

<211> 343

<212> PRT

<213> Mus musculus

<400> 333

Met Ala Pro Cys Thr Ala Ser Pro Cys Gly Gly Ser Ala Ala Ser Ala  
1 5 10 15

Arg Pro Gln Arg Gly Leu Glu Lys Ala Arg Val Asp Ser Lys Arg Thr  
20 25 30

Glu Gly Gln Asp Leu Asn Phe Ser Lys Asn Leu Arg Ala Val Val Ser  
35 40 45

Val Leu Gly Ser Trp Leu Arg Asn His Pro Gln Asp Phe Arg Asp Pro  
50 55 60

Pro Asp His Gln Asn Leu Gly Asn Val Arg Ile Phe Leu Gly Trp Ala  
65 70 75 80

Ala Pro Gly Gly Ala Glu Ala Arg Glu Ala Glu Lys Leu Leu Glu Asp  
85 90 95

Phe Leu Lys Glu Ala Lys Gly Glu Gln Thr Glu Glu Glu Lys Arg Leu  
100 105 110

Ala Trp Ser Gly Pro Pro Arg Ile Ala Gln Thr Pro Gly Ser Glu Phe  
115 120 125

Ala Glu Asp Cys Val Glu Glu Glu Gly Pro Ser Ser Glu Gly Pro Glu  
130 135 140

Leu Leu Asp Phe Ser Val Asp Asp Val Ala Glu Gln Leu Thr Leu Met  
145 150 155 160

Asp Val Glu Leu Phe Leu Arg Val Arg Ser Cys Glu Cys Leu Gly Ser  
165 170 175

Met Trp Ser Gln Arg Asp Arg Pro Gly Ala Ala Gly Ile Ser Pro Thr  
180 185 190

Val Arg Ala Thr Val Ala Gln Phe Asn Thr Val Thr Gly Cys Val Leu  
195 200 205

Gly Ser Val Leu Ala Ala Pro Gly Leu Ala Ala Ser Gln Lys Ala Gln  
210 215 220

Arg Ile Glu Lys Trp Ile Arg Ile Ala Gln Arg Cys Arg Glu Leu Arg



Phe Leu Lys Glu Ala Lys Gly Glu Gln Thr Glu Glu Glu Lys Arg Leu  
 100 105 110  
 Ala Trp Ser Gly Pro Pro Arg Ile Ala Gln Thr Pro Gly Ser Glu Phe  
 115 120 125  
 Ala Glu Asp Cys Val Glu Glu Glu Gly Pro Ser Ser Glu Gly Pro Glu  
 130 135 140  
 Leu Leu Asp Phe Ser Val Asp Asp Val Ala Glu Gln Leu Thr Leu Met  
 145 150 155 160  
 Asp Val Glu Leu Phe Leu Arg Val Arg Ser Cys Glu Cys Leu Gly Ser  
 165 170 175  
 Met Trp Ser Gln Arg Asp Arg Pro Gly Ala Ala Gly Ile Ser Pro Thr  
 180 185 190  
 Val Arg Ala Thr Val Ala Gln Phe Asn Thr Val Thr Gly Cys Val Leu  
 195 200 205  
 Gly Ser Val Leu Ala Ala Pro Gly Leu Ala Ala Ser Gln Lys Ala Gln  
 210 215 220  
 Arg Ile Glu Lys Trp Ile Arg Ile Ala Gln Arg Cys Arg Glu Leu Arg  
 225 230 235 240  
 Asn Phe Ser Ser Leu Arg Ala Ile Leu Ser Ala Leu Gln Ser Asn Pro  
 245 250 255  
 Ile Tyr Arg Leu Lys Arg Ser Trp Gly Ala Val Ser Arg Glu Pro Leu  
 260 265 270  
 Ser Val Phe Arg Lys Leu Ser Gln Ile Phe Ser Asp Glu Asp Asn His  
 275 280 285  
 Leu Ser Ser Arg Ala Ile Leu Ser Gln Glu Glu Thr Thr Glu Asp Asp  
 290 295 300  
 Asp Cys Pro Ser Gly Ser Leu Pro Ser Lys Leu Pro Pro Gly Pro Val  
 305 310 315 320  
 Pro Tyr Leu Gly Thr Phe Leu Thr Asp Leu Val Met Leu Asp Thr Ala  
 325 330 335  
 Leu Pro Asp Thr Leu Lys Val  
 340

<210> 335

<211> 709

<212> PRT

<213> Mus musculus

<400> 335

Met Glu Arg Thr Ala Gly Lys Glu Leu Ala Leu Ala Pro Leu Gln Asp  
1 5 10 15

Trp Gly Glu Glu Thr Glu Asp Gly Ala Val Tyr Ser Val Ser Leu Arg  
20 25 30

Arg Gln Arg Ser Gln Arg Ser Thr Pro Glu Arg Ser Gly Glu Gly Gln  
35 40 45

Thr Pro Ile Pro Ala Thr Asp Thr Phe Leu His Tyr Arg Thr Ser Lys  
50 55 60

Val Arg Ala Leu Arg Ala Ala Arg Leu Glu Arg Leu Val His Glu Leu  
65 70 75 80

Val Ser Gly Asp Arg Glu Gln Asp Pro Gly Phe Val Pro Ala Phe Leu  
85 90 95

Ala Thr His Arg Ala Phe Val Pro Thr Ala Arg Val Leu Gly Phe Leu  
100 105 110

Leu Pro Pro Pro Pro Pro Pro Pro Pro Pro Ala Gly Val Asp Ser  
115 120 125

Lys Arg Thr Glu Gly Gln Asp Leu Asn Phe Ser Lys Asn Leu Arg Ala  
130 135 140

Val Val Ser Val Leu Gly Ser Trp Leu Arg Asn His Pro Gln Asp Phe  
145 150 155 160

Arg Asp Pro Pro Asp His Gln Asn Leu Gly Asn Val Arg Ile Phe Leu  
165 170 175

Gly Trp Ala Ala Pro Gly Gly Ala Glu Ala Arg Glu Ala Glu Lys Leu  
180 185 190

Leu Glu Asp Phe Leu Lys Glu Ala Lys Gly Glu Gln Thr Glu Glu Glu  
195 200 205

Lys Arg Leu Ala Trp Ser Gly Pro Pro Arg Ile Ala Gln Thr Pro Gly  
210 215 220

Ser Glu Phe Ala Glu Asp Cys Val Glu Glu Glu Gly Pro Ser Ser Glu  
 225 230 235 240  
 Gly Pro Glu Leu Leu Asp Phe Ser Val Asp Asp Val Ala Glu Gln Leu  
 245 250 255  
 Thr Leu Met Asp Val Glu Leu Phe Leu Arg Val Arg Ser Cys Glu Cys  
 260 265 270  
 Leu Gly Ser Met Trp Ser Gln Arg Asp Arg Pro Gly Ala Ala Gly Ile  
 275 280 285  
 Ser Pro Thr Val Arg Ala Thr Val Ala Gln Phe Asn Thr Val Thr Gly  
 290 295 300  
 Cys Val Leu Gly Ser Val Leu Ala Ala Pro Gly Leu Ala Ala Ser Gln  
 305 310 315 320  
 Arg Ala Gln Arg Ile Glu Lys Trp Ile Arg Ile Ala Gln Arg Cys Arg  
 325 330 335  
 Glu Leu Arg Asn Phe Ser Ser Leu Arg Ala Ile Leu Ser Ala Leu Gln  
 340 345 350  
 Ser Asn Pro Ile Tyr Arg Leu Lys Arg Ser Trp Gly Ala Val Ser Arg  
 355 360 365  
 Glu Pro Leu Ser Val Phe Arg Lys Leu Ser Gln Ile Phe Ser Asp Glu  
 370 375 380  
 Asp Asn His Leu Ser Ser Arg Ala Ile Leu Ser Gln Glu Glu Thr Thr  
 385 390 395 400  
 Glu Asp Asp Asp Cys Pro Ser Gly Ser Leu Pro Ser Lys Leu Pro Pro  
 405 410 415  
 Gly Pro Val Pro Tyr Leu Gly Thr Phe Leu Thr Asp Leu Val Met Leu  
 420 425 430  
 Asp Thr Ala Leu Pro Asp Thr Leu Lys Gly Asn Leu Ile Asn Phe Glu  
 435 440 445  
 Lys Arg Arg Lys Glu Trp Glu Ile Leu Ala Arg Ile Gln Gln Leu Gln  
 450 455 460  
 Gln Arg Cys Gln Arg Tyr Ser Leu Ser Pro Arg Pro Pro Ile Leu Ala  
 465 470 475 480



Ala Leu Arg Ala Gln Arg Gln Leu Ser Glu Glu Gln Ser Tyr Arg Val  
485 490 495

Ser Arg Val Ile Glu Pro Pro Ala Ala Ser Cys Pro Ser Ser Pro Arg  
500 505 510

Ile Arg Arg Arg Ile Ser Leu Thr Lys Arg Leu Ser Ala Lys Leu Ser  
515 520 525

Arg Glu Lys Asn Ser Ser Pro Gly Gly Ser Pro Gly Asp Pro Ser Ser  
530 535 540

Pro Thr Ser Ser Val Ser Pro Gly Ser Pro Pro Ser Ser Pro Arg Asn  
545 550 555 560

Arg Glu Pro Pro Pro Pro Gly Ser Pro Pro Ala Ser Pro Gly Pro Gln  
565 570 575

Ser Pro Ser Thr Lys Leu Ser Leu Thr Met Asp Pro Pro Gly Pro Trp  
580 585 590

Pro Val Thr Leu Thr Pro Ser Ser Ser Arg Val Pro Leu Leu Gly Gln  
595 600 605

Gln Thr Ser Glu Ala Arg Val Ile Arg Val Ser Ile Asn Asn Asn His  
610 615 620

Gly Asn Leu Tyr Arg Ser Ile Leu Leu Thr Cys Gln Asp Lys Ala Pro  
625 630 635 640

Ser Val Val Gln Arg Ala Leu Glu Lys His Asn Val Pro Gln Pro Trp  
645 650 655

Ala Arg Asp Tyr Gln Leu Phe Gln Val Leu Pro Gly Asp Arg Glu Leu  
660 665 670

Leu Ile Pro Asp Gly Ala Asn Val Phe Tyr Ala Met Ser Pro Ala Ala  
675 680 685

Pro Gly Asp Phe Leu Leu Arg Arg Lys Glu Gly Thr Gly His Thr Leu  
690 695 700

Ser Ala Ser Pro Thr  
705

<210> 336

<211> 261

<212> PRT

<213> Homo sapiens

<400> 336

Leu Leu Asp Phe Ser Val Asp Glu Val Ala Glu Gln Leu Thr Leu Ile  
1 5 10 15

Asp Leu Glu Leu Phe Ser Lys Val Arg Leu Tyr Glu Cys Leu Gly Ser  
20 25 30

Val Trp Ser Gln Arg Asp Arg Pro Gly Ala Ala Gly Ala Ser Pro Thr  
35 40 45

Val Arg Ala Thr Val Ala Gln Phe Asn Thr Val Thr Gly Cys Val Leu  
50 55 60

Gly Ser Val Leu Gly Ala Pro Gly Leu Ala Ala Pro Gln Arg Ala Gln  
65 70 75 80

Arg Leu Glu Lys Trp Ile Arg Ile Ala Gln Arg Cys Arg Glu Leu Arg  
85 90 95

Asn Phe Ser Ser Leu Arg Ala Ile Leu Ser Ala Leu Gln Ser Asn Pro  
100 105 110

Ile Tyr Arg Leu Lys Arg Ser Trp Gly Ala Val Ser Arg Glu Pro Leu  
115 120 125

Ser Thr Phe Arg Lys Leu Ser Gln Ile Phe Ser Asp Glu Asn Asn His  
130 135 140

Leu Ser Ser Arg Glu Ile Leu Phe Gln Glu Glu Ala Thr Glu Gly Ser  
145 150 155 160

Gln Glu Glu Asp Asn Thr Pro Gly Ser Leu Pro Ser Lys Pro Pro Pro  
165 170 175

Gly Pro Val Pro Tyr Leu Gly Thr Phe Leu Thr Asp Leu Val Met Leu  
180 185 190

Asp Thr Ala Leu Pro Asp Met Leu Glu Gly Asp Leu Ile Asn Phe Glu  
195 200 205

Lys Arg Arg Lys Glu Trp Glu Ile Leu Ala Arg Ile Gln Gln Leu Gln  
210 215 220

Arg Arg Cys Gln Ser Tyr Thr Leu Ser Pro His Pro Pro Ile Leu Ala



Val Leu Leu Lys Asp Leu Thr Phe Ile Asp Glu Gly Asn Pro Asp Phe  
 165 170 175  
 Leu Lys Asn Gly Leu Val Asn Phe Glu Lys Arg Arg Lys Ile Ala Lys  
 180 185 190  
 Ile Leu Arg Glu Ile Arg Gln Leu Gln Ser Gln Pro Tyr Asn Leu Arg  
 195 200 205  
 Pro Asn Arg Ser Asp Ile Gln Ser Leu Leu Gln Gln Ser Leu Asp Ser  
 210 215 220  
 Leu Pro Glu Glu Asn Glu Leu Tyr Glu Leu Ser Leu Arg Ile Glu  
 225 230 235  
  
 <210> 338  
 <211> 211  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 338  
 Leu Asp Phe Ser Val Asp Glu Val Ala Glu Gln Leu Thr Leu Ile Asp  
 1 5 10 15  
 Leu Glu Leu Phe Ser Lys Val Arg Leu Tyr Glu Cys Leu Gly Ser Val  
 20 25 30  
 Trp Ser Gln Arg Asp Arg Pro Gly Ala Ala Gly Ala Ser Pro Thr Val  
 35 40 45  
 Arg Ala Thr Val Ala Gln Phe Asn Thr Val Thr Gly Cys Val Leu Gly  
 50 55 60  
 Ser Val Leu Gly Ala Pro Gly Leu Ala Ala Pro Gln Arg Ala Gln Arg  
 65 70 75 80  
 Leu Glu Lys Trp Ile Arg Ile Ala Gln Arg Cys Arg Glu Leu Arg Asn  
 85 90 95  
 Phe Ser Ser Leu Arg Ala Ile Leu Ser Ala Leu Gln Ser Asn Pro Ile  
 100 105 110  
 Tyr Arg Leu Lys Arg Ser Trp Gly Ala Val Ser Arg Glu Pro Leu Ser  
 115 120 125  
 Thr Phe Arg Lys Leu Ser Gln Ile Phe Ser Asp Glu Asn Asn His Leu

130  
 135  
 140  
 Ser Ser Arg Glu Ile Leu Phe Gln Glu Glu Ala Thr Glu Gly Ser Gln  
 145 150 155 160  
 Glu Glu Asp Asn Thr Pro Gly Ser Leu Pro Ser Lys Pro Pro Pro Gly  
 165 170 175  
 Pro Val Pro Tyr Leu Gly Thr Phe Leu Thr Asp Leu Val Met Leu Asp  
 180 185 190  
 Thr Ala Leu Pro Asp Met Leu Glu Gly Asp Leu Ile Asn Phe Glu Lys  
 195 200 205  
 Arg Arg Lys  
 210

<210> 339  
 <211> 188  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: RasGEF domain  
 sequence

<400> 339  
 Leu Leu Leu Asp Pro Leu Glu Leu Ala Lys Gln Leu Thr Leu Leu Glu  
 1 5 10 15  
 His Glu Leu Phe Lys Lys Ile Asp Pro Phe Glu Cys Leu Gly Gln Val  
 20 25 30  
 Trp Gly Lys Lys Tyr Gly Lys Asn Glu Arg Ser Pro Asn Ile Asp Lys  
 35 40 45  
 Thr Ile Lys Asn Phe Asn Gln Leu Thr Asn Phe Val Gly Thr Thr Ile  
 50 55 60  
 Leu Leu Gln Thr Asp Pro Lys Lys Arg Ala Glu Leu Ile Gln Lys Phe  
 65 70 75 80  
 Ile Gln Val Ala Asp His Cys Arg Glu Leu Asn Asn Phe Asn Ser Leu  
 85 90 95  
 Leu Ala Ile Ile Ser Ala Leu Tyr Ser Ser Pro Ile Tyr Arg Leu Lys  
 100 105 110

Lys Thr Trp Gln Tyr Val Pro Pro Gln Ser Leu Lys Leu Phe Glu Glu  
115 120 125

Leu Asn Lys Leu Met Asp Ser Asp Arg Asn Phe Ser Asn Tyr Arg Glu  
130 135 140

Leu Leu Lys Ser Ile Phe Pro Leu Pro Cys Val Pro Phe Phe Gly Val  
145 150 155 160

Tyr Leu Ser Asp Leu Thr Phe Leu Glu Glu Gly Asn Pro Asp Phe Leu  
165 170 175

Glu Thr Asn Leu Val Asn Phe Ser Lys Arg Arg Lys  
180 185

<210> 340

<211> 89

<212> PRT

<213> Homo sapiens

<400> 340

Val Leu Arg Val Tyr Phe Gln Asp Leu Lys Pro Gly Val Ala Tyr Lys  
1 5 10 15

Thr Ile Arg Val Ser Ser Glu Asp Thr Ala Pro Asp Val Val Gln Leu  
20 25 30

Ala Leu Glu Lys Phe Arg Leu Asp Asp Glu Asp Pro Glu Glu Tyr Ala  
35 40 45

Leu Val Glu Val Leu Ser Gly Asp Lys Glu Arg Lys Leu Pro Asp Asp  
50 55 60

Glu Asn Pro Leu Gln Leu Arg Leu Asn Leu Pro Arg Asp Gly Leu Ser  
65 70 75 80

Leu Arg Phe Leu Leu Lys Arg Arg Asp  
85

<210> 341

<211> 89

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Ras  
association (RalGDS/AF-6) domain sequence

<400> 341

Val Leu Arg Val Tyr Phe Gln Asp Leu Lys Pro Gly Val Ala Tyr Lys  
1 5 10 15

Thr Ile Arg Val Ser Ser Glu Asp Thr Ala Pro Asp Val Val Gln Leu  
20 25 30

Ala Leu Glu Lys Phe Arg Leu Asp Asp Glu Asp Pro Glu Glu Tyr Ala  
35 40 45

Leu Val Glu Val Leu Ser Gly Asp Lys Glu Arg Lys Leu Pro Asp Asp  
50 55 60

Glu Asn Pro Leu Gln Leu Arg Leu Asn Leu Pro Arg Asp Gly Leu Ser  
65 70 75 80

Leu Arg Phe Leu Leu Lys Arg Arg Asp  
85

<210> 342

<211> 83

<212> PRT

<213> Homo sapiens

<400> 342

Val Ile Arg Val Ser Ile Asp Asn Asp His Gly Asn Leu Tyr Arg Ser  
1 5 10 15

Ile Leu Leu Thr Ser Gln Asp Lys Ala Pro Ser Val Val Arg Arg Ala  
20 25 30

Leu Gln Lys His Asn Val Pro Gln Pro Trp Ala Cys Asp Tyr Gln Leu  
35 40 45

Phe Gln Val Leu Pro Gly Asp Arg Leu Leu Ile Pro Asp Asn Ala Asn  
50 55 60

Val Phe Tyr Ala Met Ser Pro Val Ala Pro Arg Asp Phe Met Leu Arg  
65 70 75 80

Arg Lys Glu

<210> 343  
<211> 86  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Ras  
association (RalGDS/AF-6) domain sequence

<400> 343  
Val Leu Arg Val Tyr Phe Asp Asp Pro Gly Gly Thr Tyr Lys Thr Leu  
1 5 10 15  
Arg Val Ser Lys Arg Thr Thr Ala Arg Asp Val Ile Gln Gln Leu Leu  
20 25 30  
Glu Lys Phe His Leu Thr Asp Asp Pro Glu Glu Tyr Val Leu Val Glu  
35 40 45  
Val Lys Glu Gly Gly Lys Glu Arg Val Leu Leu Pro Asp Glu Lys Pro  
50 55 60  
Leu Gln Leu Gln Lys Leu Trp Pro Arg Gln Gly Ser Asn Leu Arg Phe  
65 70 75 80  
Val Leu Arg Lys Arg Asp  
85

<210> 344  
<211> 75  
<212> PRT  
<213> Homo sapiens

<400> 344  
Asp Pro Ser Phe Met Pro Ala Phe Leu Ala Thr Tyr Arg Thr Phe Val  
1 5 10 15  
Pro Thr Ala Cys Leu Leu Gly Phe Leu Leu Pro Pro Met Pro Pro Pro  
20 25 30  
Pro Pro Pro Gly Val Glu Ile Lys Lys Thr Ala Val Gln Asp Leu Ser  
35 40 45  
Phe Asn Lys Asn Leu Arg Ala Val Val Ser Val Leu Gly Ser Trp Leu  
50 55 60  
Gln Asp His Pro Gln Asp Phe Arg Asp Pro Pro



65

70

75

&lt;210&gt; 345

&lt;211&gt; 74

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: RasGEFN  
domain sequence

&lt;400&gt; 345

Asp	Pro	Thr	Phe	Val	Glu	Thr	Phe	Leu	Leu	Thr	Tyr	Arg	Ser	Phe	Ile
1				5					10					15	

Thr	Thr	Gln	Glu	Leu	Leu	Gln	Lys	Leu	Leu	Tyr	Arg	Tyr	Asn	Ala	Ile
		20					25						30		

Pro	Pro	Glu	Gly	Val	Glu	Asp	Ile	Trp	Val	Lys	Glu	Lys	Val	Asn	Pro
		35					40					45			

Arg	Arg	Ile	Gln	Asn	Arg	Val	Leu	Asn	Ile	Leu	Arg	Leu	Trp	Val	Glu
		50				55					60				

Asn	Tyr	Trp	Gln	Asp	Phe	Glu	Glu	Asp	Pro
65							70		

&lt;210&gt; 346

&lt;211&gt; 184

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 346

Met	Ser	Arg	Leu	Ser	Arg	Ser	Leu	Leu	Trp	Ala	Ala	Thr	Cys	Leu	Gly
1				5					10					15	

Val	Leu	Cys	Val	Leu	Ser	Ala	Asp	Lys	Asn	Thr	Thr	Gln	His	Pro	Asn
		20						25					30		

Val	Thr	Thr	Leu	Ala	Pro	Ile	Ser	Asn	Val	Thr	Ser	Ala	Pro	Val	Thr
		35						40				45			

Ser	Leu	Pro	Leu	Val	Thr	Thr	Pro	Ala	Pro	Glu	Thr	Cys	Glu	Gly	Arg
	50						55						60		

Asn	Ser	Cys	Val	Ser	Cys	Phe	Asn	Val	Ser	Val	Val	Asn	Thr	Thr	Cys
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----



Val Ser Asp Cys Gln Val Gly Asn Thr Thr Asp Phe Cys Ser Val Ser  
 100 105 110  
 Thr Ala Thr Pro Val Pro Thr Ala Asn Ser Thr Ala Lys Pro Thr Val  
 115 120 125  
 Gln Pro Ser Pro Ser Thr Thr Ser Lys Thr Val Thr Thr Ser Gly Thr  
 130 135 140  
 Thr Asn Asn Thr Val Thr Pro Thr Ser Gln Pro Val Arg Lys Ser Thr  
 145 150 155 160  
 Phe Asp Ala Ala Ser Phe Ile Gly Gly Ile Val Leu Val Leu Gly Val  
 165 170 175  
 Gln Ala Val Ile Phe Phe Leu Tyr Lys Phe Cys Lys Ser Lys Glu Arg  
 180 185 190  
 Asn Tyr His Thr Leu  
 195

<210> 348  
 <211> 178  
 <212> PRT  
 <213> Homo sapiens

<400> 348  
 Met Ser Arg Leu Ser Arg Ser Leu Leu Trp Ala Ala Thr Cys Leu Gly  
 1 5 10 15  
 Val Leu Cys Val Leu Ser Ala Asp Lys Asn Thr Thr Gln His Pro Asn  
 20 25 30  
 Val Thr Thr Leu Ala Pro Ile Ser Asn Val Thr Ser Ala Pro Val Thr  
 35 40 45  
 Ser Leu Pro Leu Val Thr Thr Pro Ala Pro Glu Thr Cys Glu Gly Arg  
 50 55 60  
 Asn Ser Cys Val Ser Cys Phe Asn Val Ser Val Val Asn Thr Thr Cys  
 65 70 75 80  
 Phe Trp Ile Glu Cys Lys Asp Glu Ser Tyr Cys Ser His Asn Ser Thr  
 85 90 95  
 Val Ser Asp Cys Gln Val Gly Asn Thr Thr Asp Phe Cys Ser Val Ser  
 100 105 110

Thr Ala Thr Pro Val Pro Thr Ala Asn Ser Thr Gly Thr Thr Asn Asn  
115 120 125

Thr Val Thr Pro Thr Ser Gln Pro Val Arg Lys Ser Thr Phe Asp Ala  
130 135 140

Ala Ser Phe Ile Gly Gly Ile Val Leu Val Leu Gly Val Gln Ala Val  
145 150 155 160

Ile Phe Phe Leu Tyr Lys Phe Cys Lys Ser Lys Glu Arg Asn Tyr His  
165 170 175

Thr Leu

<210> 349

<211> 189

<212> PRT

<213> Homo sapiens

<400> 349

Met Ser Arg Leu Ser Arg Ser Leu Leu Trp Ala Ala Thr Cys Leu Gly  
1 5 10 15

Val Leu Cys Val Leu Ser Ala Asp Lys Asn Thr Thr Gln His Pro Asn  
20 25 30

Val Thr Thr Leu Ala Pro Ile Ser Asn Val Thr Ser Ala Pro Val Thr  
35 40 45

Ser Leu Pro Leu Val Thr Thr Pro Ala Pro Glu Thr Cys Glu Gly Arg  
50 55 60

Asn Ser Cys Val Ser Cys Phe Asn Val Ser Val Val Asn Thr Thr Cys  
65 70 75 80

Phe Trp Ile Glu Cys Lys Asp Glu Ser Tyr Cys Ser His Asn Ser Thr  
85 90 95

Val Ser Asp Cys Gln Val Gly Asn Thr Thr Asp Phe Cys Ser Val Ser  
100 105 110

Thr Ala Thr Pro Val Pro Thr Ala Asn Ser Thr Ala Lys Pro Thr Val  
115 120 125

Gln Pro Ser Pro Ser Thr Thr Ser Lys Thr Val Thr Thr Ser Gly Thr

130                                      135                                      140  
 Thr Asn Asn Thr Val Thr Pro Thr Ser Gln Pro Val Arg Lys Ser Thr  
 145                                      150                                      155                                      160  
 Phe Asp Ala Ala Ser Phe Ile Gly Gly Ile Val Leu Val Leu Glu Ile  
                                     165                                      170                                      175  
 Arg Cys His Thr Arg Asn Tyr Ile Pro Asp Leu Lys Lys  
                                     180                                      185  
  
 <210> 350  
 <211> 195  
 <212> PRT  
 <213> Rattus norvegicus  
  
 <400> 350  
 Met Ser Gly Ala Ser Arg Gly Leu Phe Trp Ala Ala Thr Cys Leu Ala  
   1                                      5                                      10                                      15  
 Ala Leu Cys Leu Ser Ala Ala Gln Ser Asn Ser Ser Ala Ser Pro Asn  
                                     20                                      25                                      30  
 Val Thr Asp Pro Pro Thr Thr Thr Ser Lys Val Val Pro Thr Thr Leu  
                                     35                                      40                                      45  
 Thr Thr Thr Lys Pro Pro Glu Thr Cys Glu Ser Phe Asn Ser Cys Val  
                                     50                                      55                                      60  
 Ser Cys Val Asn Ala Thr Leu Thr Asn Asn Ile Thr Cys Val Trp Leu  
   65                                      70                                      75                                      80  
 Asp Cys His Glu Ala Asn Lys Thr Tyr Cys Ser Ser Glu Leu Val Ser  
                                     85                                      90                                      95  
 Asn Cys Thr Gln Lys Thr Ser Thr Asp Ser Cys Ser Val Ile Pro Thr  
                                     100                                      105                                      110  
 Thr Pro Val Pro Thr Asn Ser Thr Ala Lys Pro Thr Thr Arg Pro Ser  
                                     115                                      120                                      125  
 Ser Pro Thr Pro Thr Pro Ser Val Val Thr Ser Ala Gly Ala Thr Asn  
   130                                      135                                      140  
 Thr Thr Val Thr Pro Thr Ser Gln Pro Glu Arg Lys Ser Thr Phe Asp  
 145                                      150                                      155                                      160

Ala Ala Ser Phe Ile Gly Gly Ile Val Leu Val Leu Gly Val Gln Ala  
165 170 175

Val Ile Phe Phe Leu Tyr Lys Phe Cys Lys Ser Lys Glu Arg Asn Tyr  
180 185 190

His Thr Leu  
195

<210> 351

<211> 407

<212> PRT

<213> Homo sapiens

<400> 351

Met Ala Val Pro Trp Leu Val Leu Leu Leu Ala Leu Pro Ile Phe Phe  
1 5 10 15

Leu Gly Val Phe Val Trp Ala Val Phe Glu His Phe Leu Thr Thr Asp  
20 25 30

Ile Pro Ala Thr Leu Gln His Pro Ala Lys Leu Arg Phe Leu His Cys  
35 40 45

Ile Phe Leu Tyr Leu Val Thr Leu Gly Asn Ile Phe Glu Lys Leu Gly  
50 55 60

Ile Cys Ser Met Pro Lys Phe Ile Arg Phe Leu His Asp Ser Val Arg  
65 70 75 80

Ile Lys Lys Asp Pro Glu Leu Val Val Thr Asp Leu Arg Phe Gly Thr  
85 90 95

Ile Pro Val Arg Leu Phe Gln Pro Lys Ala Ala Ser Ser Arg Pro Arg  
100 105 110

Arg Gly Ile Ile Phe Tyr His Gly Gly Ala Thr Val Phe Gly Ser Leu  
115 120 125

Asp Cys Tyr His Gly Leu Cys Asn Tyr Leu Ala Arg Glu Thr Glu Ser  
130 135 140

Val Leu Leu Met Ile Gly Tyr Arg Lys Leu Pro Asp His His Ser Pro  
145 150 155 160

Ala Leu Phe Gln Asp Cys Met Asn Ala Ser Ile His Phe Leu Lys Ala  
165 170 175

Leu Glu Thr Tyr Gly Val Asp Pro Ser Arg Val Val Val Cys Gly Glu  
 180 185 190  
 Ser Val Gly Gly Ala Ala Val Ala Ala Ile Thr Gln Ala Leu Val Gly  
 195 200 205  
 Arg Ser Asp Leu Pro Arg Ile Arg Ala Gln Val Leu Ile Tyr Pro Val  
 210 215 220  
 Val Gln Ala Phe Cys Leu Gln Leu Pro Ser Phe Gln Gln Asn Gln Asn  
 225 230 235 240  
 Val Pro Leu Leu Ser Arg Lys Phe Met Val Thr Ser Leu Cys Asn Tyr  
 245 250 255  
 Leu Ala Ile Asp Leu Ser Trp Arg Asp Ala Ile Leu Asn Gly Thr Cys  
 260 265 270  
 Val Pro Pro Asp Val Trp Arg Lys Tyr Glu Lys Trp Leu Ser Pro Asp  
 275 280 285  
 Asn Ile Pro Lys Lys Phe Lys Asn Arg Gly Tyr Gln Pro Trp Ser Pro  
 290 295 300  
 Gly Pro Phe Asn Glu Ala Ala Tyr Leu Glu Ala Lys His Met Leu Asp  
 305 310 315 320  
 Val Glu Asn Ser Pro Leu Ile Ala Asp Asp Glu Val Ile Ala Gln Leu  
 325 330 335  
 Pro Glu Ala Phe Leu Val Ser Cys Glu Asn Asp Ile Leu Arg Asp Asp  
 340 345 350  
 Ser Leu Leu Tyr Lys Lys Arg Leu Glu Asp Gln Gly Val Arg Val Thr  
 355 360 365  
 Trp Tyr His Leu Tyr Asp Gly Phe His Gly Ser Ile Ile Phe Phe Asp  
 370 375 380  
 Lys Lys Ala Leu Ser Phe Pro Cys Ser Leu Lys Ile Val Asn Ala Val  
 385 390 395 400  
 Val Ser Tyr Ile Lys Gly Ile  
 405

<210> 352

<211> 409

<212> PRT

<213> Homo sapiens

<400> 352

Met Lys Lys Thr Glu Asp Asn Asn Thr Leu Val Phe Ser Val Asp Val  
1 5 10 15

Lys Ala Asn Asn Gly Trp Pro Pro Cys Glu Thr Glu Ser Pro Pro Leu  
20 25 30

His Leu Pro Ala Ala Val Asp Met Asp Leu Pro Pro Leu Lys Tyr Asp  
35 40 45

Pro Asp Val Val Val Thr Asp Phe Arg Phe Gly Thr Ile Pro Val Lys  
50 55 60

Leu Tyr Gln Ser Lys Ala Ser Thr Cys Thr Leu Lys Pro Gly Ile Val  
65 70 75 80

Tyr Tyr His Gly Gly Gly Gly Val Met Gly Ser Leu Ser Lys Asn His  
85 90 95

Phe Leu Arg Pro Pro Lys Gly Met Asp Trp Arg Val Gly Val Leu Glu  
100 105 110

Lys Val Val Gln Ala Val Pro Arg Arg Arg Ile Ser Glu Lys Ile Asp  
115 120 125

Arg Lys Phe Ala Gly Val Glu Glu Asn Leu Val Gly Ile Gly Pro Ser  
130 135 140

Ala Val Ser Val Gly Arg Arg Arg Tyr Arg Lys Leu Pro Lys His Lys  
145 150 155 160

Phe Pro Val Pro Val Arg Asp Cys Leu Val Ala Thr Ile His Phe Leu  
165 170 175

Lys Ser Leu Asp Ala Tyr Gly Val Asp Pro Ala Arg Val Val Val Cys  
180 185 190

Gly Asp Ser Phe Gly Gly Ala Ile Ala Ala Val Val Cys Gln Gln Leu  
195 200 205

Val Asp Arg Pro Asp Leu Pro Arg Ile Arg Ala Gln Ile Leu Ile Tyr  
210 215 220

Ala Ile Leu Gln Ala Leu Asp Leu Gln Thr Pro Ser Phe Gln Gln Arg



225		230		235		240
Lys Asn Ile Pro Leu Leu Thr Trp Ser Phe Ile Cys Tyr Cys Phe Phe						
	245		250		255	
Gln Asn Leu Asp Phe Ser Ser Ser Trp Gln Glu Val Ile Met Lys Gly						
	260		265		270	
Ala His Leu Pro Ala Glu Val Trp Glu Lys Tyr Arg Lys Trp Leu Gly						
	275		280		285	
Pro Glu Asn Ile Pro Glu Arg Phe Lys Glu Arg Gly Tyr Gln Leu Lys						
	290		295		300	
Pro His Glu Pro Met Asn Glu Ala Ala Tyr Leu Glu Val Ser Val Val						
305		310		315		320
Leu Asp Val Met Cys Ser Pro Leu Ile Ala Glu Asp Asp Ile Val Ser						
	325		330		335	
Gln Leu Pro Glu Thr Cys Ile Val Ser Cys Glu Tyr Asp Ala Leu Arg						
	340		345		350	
Asp Asn Ser Leu Leu Tyr Lys Lys Arg Leu Glu Asp Leu Gly Val Pro						
	355		360		365	
Val Thr Trp His His Met Glu Asp Gly Phe His Gly Val Leu Arg Thr						
	370		375		380	
Ile Asp Met Ser Phe Leu His Phe Pro Cys Ser Met Arg Ile Leu Ser						
385		390		395		400
Ala Leu Val Gln Phe Val Lys Gly Leu						
	405					

<210> 353

<211> 398

<212> PRT

<213> Orycctolagus cuniculus

<400> 353

Gly Val Lys Thr Val Leu Leu Leu Ile Val Gly Val Leu Gly Ala Tyr
1 5 10 15

Tyr Val Tyr Thr Pro Leu Pro Asp Asn Ile Glu Glu Pro Trp Arg Leu
20 25 30

Leu Trp Val Asn Ala His Met Lys Thr Leu Thr Asn Leu Ala Leu Phe  
 35 40 45  
 Ala Glu Tyr Leu Gly Ser Asn Ile Phe Met Asn Thr Val Lys Phe Leu  
 50 55 60  
 Thr Ser Phe Gln Glu Val Pro Pro Thr Ser Asp Glu Asn Val Thr Val  
 65 70 75 80  
 Thr Glu Thr Thr Phe Asn Asn Val Pro Val Arg Val Tyr Val Pro Lys  
 85 90 95  
 Arg Lys Ser Lys Thr Leu Arg Arg Gly Leu Phe Tyr Ile His Gly Gly  
 100 105 110  
 Gly Trp Cys Val Gly Ser Ala Ala Leu Ser Gly Tyr Asp Leu Leu Ser  
 115 120 125  
 Arg Arg Thr Ala Asp Arg Leu Asp Val Val Val Val Ser Thr Asn Tyr  
 130 135 140  
 Arg Leu Ala Pro Glu Tyr His Phe Pro Ile Gln Phe Glu Asp Val Tyr  
 145 150 155 160  
 Asp Ala Leu Lys Trp Phe Leu Arg Gln Asp Val Leu Glu Lys Tyr Gly  
 165 170 175  
 Val Asp Pro Glu Arg Val Gly Val Ser Gly Asp Ser Ala Gly Gly Asn  
 180 185 190  
 Leu Ala Ala Ala Val Ala Gln Gln Leu Ile Lys Asp Pro Asp Val Lys  
 195 200 205  
 Ile Lys Leu Lys Thr Gln Ser Leu Ile Tyr Pro Ala Leu Gln Thr Leu  
 210 215 220  
 Asp Met Asp Leu Pro Ser Tyr Arg Glu Asn Ala Gln Phe Pro Ile Leu  
 225 230 235 240  
 Ser Lys Ser Phe Met Val Arg Leu Trp Ser Glu Tyr Phe Thr Ser Asp  
 245 250 255  
 Arg Ser Leu Glu Lys Ala Met Leu Leu Asn Gln His Val Pro Val Glu  
 260 265 270  
 Ser Ser His Leu Phe Lys Phe Thr Asn Trp Ser Ser Leu Leu Pro Glu  
 275 280 285

Lys Phe Lys Lys Gly His Val Tyr Asn Thr Pro Thr Tyr Gly Ser Ser  
290 295 300

Glu Leu Ala Arg Lys Tyr Pro Gly Phe Leu Asp Val Arg Ala Ala Pro  
305 310 315 320

Leu Leu Ala Asp Asp Ala Gln Leu Arg Gly Phe Pro Leu Thr Tyr Val  
325 330 335

Ile Thr Cys Gln Tyr Asp Val Leu Arg Asp Asp Gly Val Met Tyr Val  
340 345 350

Thr Arg Leu Arg Asn Ala Gly Val Gln Val Thr His Asn His Ile Glu  
355 360 365

Asp Gly Phe His Gly Ala Leu Ser Tyr Asn Gly Phe Lys Thr Gly Tyr  
370 375 380

Arg Val Glu Lys Gln Tyr Phe Glu Trp Leu Arg Glu Asn Val  
385 390 395

<210> 354

<211> 399

<212> PRT

<213> Homo sapiens

<400> 354

Met Gly Arg Lys Ser Leu Tyr Leu Leu Ile Val Gly Ile Leu Ile Ala  
1 5 10 15

Tyr Tyr Ile Tyr Thr Pro Leu Pro Asp Asn Val Glu Glu Pro Trp Arg  
20 25 30

Met Met Trp Ile Asn Ala His Leu Lys Thr Ile Gln Asn Leu Ala Thr  
35 40 45

Phe Val Glu Leu His Gly Ser Ser Ile Phe Met Asp Ser Phe Lys Val  
50 55 60

Val Gly Ser Phe Asp Glu Val Pro Pro Thr Ser Asp Glu Asn Val Thr  
65 70 75 80

Val Thr Glu Thr Lys Phe Asn Asn Ile Leu Val Arg Val Tyr Val Pro  
85 90 95

Lys Arg Lys Ser Glu Ala Leu Arg Arg Gly Leu Phe Tyr Ile His Gly  
100 105 110

Gly Gly Trp Cys Val Gly Ser Ala Ala Leu Ser Gly Tyr Asp Leu Leu  
 115 120 125  
 Ser Arg Trp Thr Ala Asp Arg Leu Asp Ala Val Val Val Ser Thr Asn  
 130 135 140  
 Tyr Arg Leu Ala Pro Lys Tyr His Phe Pro Ile Gln Phe Glu Asp Val  
 145 150 155 160  
 Tyr Asn Ala Leu Arg Trp Phe Leu Arg Lys Lys Val Leu Ala Lys Tyr  
 165 170 175  
 Gly Val Asn Pro Glu Arg Ile Gly Ile Ser Gly Asp Ser Ala Gly Gly  
 180 185 190  
 Asn Leu Ala Ala Ala Val Thr Gln Gln Leu Leu Asp Asp Pro Asp Val  
 195 200 205  
 Lys Ile Lys Leu Lys Ile Gln Ser Leu Ile Tyr Pro Ala Leu Gln Pro  
 210 215 220  
 Leu Asp Val Asp Leu Pro Ser Tyr Gln Glu Asn Ser Asn Phe Leu Phe  
 225 230 235 240  
 Leu Ser Lys Ser Leu Met Val Arg Phe Trp Ser Glu Tyr Phe Thr Thr  
 245 250 255  
 Asp Arg Ser Leu Glu Lys Ala Met Leu Ser Arg Gln His Val Pro Val  
 260 265 270  
 Glu Ser Ser His Leu Phe Lys Phe Ile Asn Trp Ser Ser Leu Leu Pro  
 275 280 285  
 Glu Arg Phe Ile Lys Gly His Val Tyr Asn Asn Pro Asn Tyr Gly Ser  
 290 295 300  
 Ser Glu Leu Ala Lys Lys Tyr Pro Gly Phe Leu Asp Val Arg Ala Ala  
 305 310 315 320  
 Pro Leu Leu Ala Asp Asp Asn Lys Leu Arg Gly Leu Pro Leu Thr Tyr  
 325 330 335  
 Val Ile Thr Cys Gln Tyr Asp Leu Leu Arg Asp Asp Gly Leu Met Tyr  
 340 345 350  
 Val Thr Arg Leu Arg Asn Thr Gly Val Gln Val Thr His Asn His Val  
 355 360 365

Glu Asp Gly Phe His Gly Ala Phe Ser Phe Leu Gly Leu Lys Ile Ser  
370 375 380

His Arg Leu Ile Asn Gln Tyr Ile Glu Trp Leu Lys Glu Asn Leu  
385 390 395

<210> 355

<211> 398

<212> PRT

<213> Rattus norvegicus

<400> 355

Met Gly Arg Thr Ile Phe Leu Leu Ile Ser Val Val Leu Val Ala Tyr  
1 5 10 15

Tyr Ile Tyr Ile Pro Leu Pro Asp Asp Ile Glu Glu Pro Trp Lys Ile  
20 25 30

Ile Leu Gly Asn Thr Leu Leu Lys Leu Gly Gly Asp Leu Ala Ser Phe  
35 40 45

Gly Glu Leu Leu Gly Leu Asn His Phe Met Asp Thr Val Gln Leu Phe  
50 55 60

Met Arg Phe Gln Val Val Pro Pro Thr Ser Asp Glu Asn Val Thr Val  
65 70 75 80

Met Glu Thr Asp Phe Asn Ser Val Pro Val Arg Ile Tyr Ile Pro Lys  
85 90 95

Arg Lys Ser Thr Thr Leu Arg Arg Gly Leu Phe Phe Ile His Gly Gly  
100 105 110

Gly Trp Cys Leu Gly Ser Ala Ala Tyr Phe Met Tyr Asp Thr Leu Ser  
115 120 125

Arg Arg Thr Ala His Arg Leu Asp Ala Val Val Val Ser Thr Asp Tyr  
130 135 140

Gly Leu Ala Pro Lys Tyr His Phe Pro Lys Gln Phe Glu Asp Val Tyr  
145 150 155 160

His Ser Leu Arg Trp Phe Leu Gln Glu Asp Ile Leu Glu Lys Tyr Gly  
165 170 175

Val Asp Pro Arg Arg Val Gly Val Ser Gly Asp Ser Ala Gly Gly Asn



Leu Phe Gln Pro Lys Ala Ala Ser Ser Arg Pro Arg Arg Gly Ile Ile  
 1 5 10 15  
 Phe Tyr His Gly Gly Ala Thr Val Phe Gly Ser Leu Asp Cys Tyr His  
 20 25 30  
 Gly Leu Cys Asn Tyr Leu Ala Arg Glu Thr Glu Ser Val Leu Leu Met  
 35 40 45  
 Ile Gly Tyr Arg Lys Leu Pro Asp His His Ser Pro Ala Leu Phe Gln  
 50 55 60  
 Asp Cys Met Asn Ala Ser Ile His Phe Leu Lys Ala Leu Glu Thr Tyr  
 65 70 75 80  
 Gly Val Asp Pro Ser Arg Val Val Val Cys Gly Glu Ser Val Gly Gly  
 85 90 95  
 Ala Ala Val Ala Ala Ile Thr Gln Ala Leu Val Gly Arg  
 100 105

<210> 357

<211> 118

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:  
 Carboxylesterase domain sequence

<400> 357

Val Tyr Thr Pro Lys Asn Arg Lys Pro Asn Ser Lys Leu Pro Val Met  
 1 5 10 15  
 Val Trp Ile His Gly Gly Gly Phe Met Phe Gly Ser Gly Leu Ser Leu  
 20 25 30  
 Tyr Asp Gly Glu Ser Leu Ala Arg Glu Gly Asn Val Ile Val Val Ser  
 35 40 45  
 Ile Asn Tyr Arg Leu Gly Pro Leu Gly Phe Leu Ser Thr Gly Asp Asp  
 50 55 60  
 Val Leu Pro Gly Asn Tyr Gly Leu Leu Asp Gln Arg Leu Ala Leu Lys  
 65 70 75 80  
 Trp Val Gln Asp Asn Ile Ala Ala Phe Gly Gly Asp Pro Asp Ser Val





Ile Ile Leu Ser Tyr Ile Leu Ile Val Ala Ala Val Leu His Ile Pro  
180 185 190

Ser Ser Ser Gly Cys Gln Lys Ala Phe Ser Thr Cys Ala Ser His Leu  
195 200 205

Thr Val Val Val Leu Gly Tyr Gly Ser Ala Ile Phe Ile Tyr Val Arg  
210 215 220

Pro Gly Lys Gly His Ser Thr Tyr Leu Asn Lys Ala Val Ala Met Val  
225 230 235 240

Thr Ala Met Val Thr Pro Phe Leu Asn Pro Phe Ile Phe Thr Phe Arg  
245 250 255

Asn Glu Lys Val Lys Glu Val Ile Glu Asp Val Thr Lys Arg Ile Phe  
260 265 270

Leu Gly Asp Pro Ala Ala Cys Arg  
275 280

<210> 359

<211> 216

<212> PRT

<213> Homo sapiens

<400> 359

Leu Met Glu Met Val Val Thr Ser Thr Val Val His Arg Met Leu Ala  
1 5 10 15

Asp Leu Leu Ser Thr His Lys Thr Met Ser Leu Ala Lys Cys Leu Thr  
20 25 30

Gln Ser Phe Phe Tyr Phe Ser Leu Gly Ser Ala Asn Phe Leu Ile Leu  
35 40 45

Met Val Met Ala Phe Asp Arg Tyr Val Ala Ile Cys His Pro Leu Arg  
50 55 60

Tyr Pro Thr Ile Thr Asn Gly Pro Val Cys Val Lys Leu Val Val Ala  
65 70 75 80

Cys Trp Val Val Gly Phe Leu Ser Ile Val Ser Pro Thr Leu Gln Lys  
85 90 95

Thr Arg Leu Trp Phe Cys Gly Pro Asn Ile Ile Gly His Tyr Phe Cys  
100 105 110

Asp Ser Ala Pro Leu Leu Lys Leu Ala Cys Ser Asp Thr Arg His Ile  
115 120 125

Glu Arg Met Asp Leu Phe Leu Ser Leu Leu Phe Val Leu Thr Thr Met  
130 135 140

Leu Leu Ile Ile Leu Ser Tyr Ile Leu Ile Val Ala Ala Val Leu His  
145 150 155 160

Ile Pro Ser Ser Ser Gly Cys Gln Lys Ala Phe Ser Thr Cys Ala Ser  
165 170 175

His Leu Thr Val Val Val Leu Gly Tyr Gly Ser Ala Ile Phe Ile Tyr  
180 185 190

Val Arg Pro Gly Lys Gly His Ser Thr Tyr Leu Asn Lys Ala Val Ala  
195 200 205

Met Val Thr Ala Met Val Thr Pro  
210 215

<210> 360

<211> 1056

<212> PRT

<213> Homo sapiens

<400> 360

Met Pro Val Leu Leu Pro Val His Phe Ser Ala Lys Cys Pro Leu Leu  
1 5 10 15

Leu Leu Cys Asp Pro Ala Asn Pro Pro Ser Glu Pro Leu Pro Ser Gln  
20 25 30

Gly Cys Phe Ile Phe Ile His Arg Val Leu Leu Asp Leu Ser Thr Ala  
35 40 45

Gly Glu Ser Gly Asn Thr Ala Gly Phe Ile Cys Asp Gln Ala Leu Leu  
50 55 60

Thr Ser Pro Val Arg Glu Asp Gly Ala Glu Asn Gly Leu Gly Phe His  
65 70 75 80

Gln Pro Val Glu Leu His Ile Cys Gly Asp Ala Val Gly Phe Val Gly  
85 90 95

Met Gly Gln Arg Arg Lys Pro Met Ser Val Pro Trp Ser His Pro Lys

100	105	110
Ile Ser Glu Lys Cys Ala Ser Asp Thr Trp Cys Thr Asp Ala Thr Tyr		
115	120	125
His Arg Glu His Ser Lys Pro Ser Gly Pro Trp Glu His Gly Pro Leu		
130	135	140
Lys Pro Phe Glu Asp Trp Val Pro Ala Leu Pro Tyr Pro Leu Trp Pro		
145	150	155
Gln Glu Leu Leu His Cys Gly Ser Gln Ser Gly Asp Cys Met Cys Leu		
165	170	175
Leu Leu Leu Glu Ser Ser Arg Arg Ser Pro Pro Thr Leu Pro Ile Pro		
180	185	190
Leu Thr Phe Pro Arg Leu Cys Gln Ser Phe Pro Leu Leu Thr Ala Ser		
195	200	205
Gly Lys Glu Pro Ser Cys Gly Phe Thr Ser Ala Leu Arg Arg Leu Tyr		
210	215	220
Gly Cys Gly Ala Ala Glu Arg Pro Gln Ser Pro Val Thr Pro Lys Thr		
225	230	235
Glu Thr Ser Glu Gln Gly Pro Lys Asp Pro Pro Ile His Leu Ala His		
245	250	255
Pro Ser Asp Arg Ala Leu Ser Pro Ser Cys Phe Leu Ser Leu Arg Ala		
260	265	270
Val Ile Leu Thr Cys Lys Asn Arg Asp Ala Gln Val Glu Glu Gly His		
275	280	285
Arg Arg Glu Pro Pro Val Leu Asp Cys Gly Tyr Gln Arg Ser Gly Thr		
290	295	300
Arg Gly Asn His Thr Arg Arg Ile Cys Ser Thr Leu Arg Gly Ser Arg		
305	310	315
Ile Glu Ala Trp Val Ala Ala Ala Thr Leu Gln Arg Gly Pro Tyr Phe		
325	330	335
Arg Lys Gln Gln Pro Leu Gly Lys Asp Ser Trp Ser Val Ala Glu Asp		
340	345	350
Trp Ile Glu Ala Phe Met Leu Ala Phe Gly Val Arg Val Leu Trp Asp		



610		615		620	
Gly Leu Pro Asn Leu Asn Ser Ala Arg Val Glu Leu Phe Ser Val Phe					
625		630		635	640
Leu Leu Val Tyr Leu Leu Asn Leu Thr Gly Asn Val Leu Ile Val Gly					
	645		650		655
Val Val Arg Ala Asp Thr Arg Leu Gln Thr Pro Met Tyr Phe Phe Leu					
	660		665		670
Gly Asn Leu Ser Cys Leu Glu Ile Leu Leu Thr Ser Val Ile Ile Pro					
	675		680		685
Lys Met Leu Ser Asn Phe Leu Ser Arg Gln His Thr Ile Ser Phe Ala					
	690		695		700
Ala Cys Ile Thr Gln Phe Tyr Phe Tyr Phe Phe Leu Gly Ala Ser Glu					
705		710		715	720
Phe Leu Leu Leu Ala Val Met Ser Ala Asp Arg Tyr Leu Ala Ile Cys					
	725		730		735
His Pro Leu Arg Tyr Pro Leu Leu Met Ser Gly Ala Val Cys Phe Arg					
	740		745		750
Val Ala Leu Ala Cys Trp Val Gly Gly Leu Val Pro Val Leu Gly Pro					
	755		760		765
Thr Val Ala Val Ala Leu Leu Pro Phe Cys Lys Gln Gly Ala Val Val					
	770		775		780
Gln His Phe Phe Cys Asp Ser Gly Pro Leu Leu Arg Leu Ala Cys Thr					
785		790		795	800
Asn Thr Lys Lys Leu Glu Glu Thr Asp Phe Val Leu Ala Ser Leu Val					
	805		810		815
Ile Val Ser Ser Leu Leu Ile Thr Ala Val Ser Tyr Gly Leu Ile Val					
	820		825		830
Leu Ala Val Leu Ser Ile Pro Ser Ala Ser Gly Arg Gln Lys Ala Phe					
	835		840		845
Ser Thr Cys Thr Ser His Leu Ile Val Val Thr Leu Phe Tyr Gly Ser					
	850		855		860
Ala Ile Phe Leu Tyr Val Arg Pro Ser Gln Ser Gly Ser Val Asp Thr					

865                                      870                                      875                                      880  
 Asn Trp Ala Val Thr Val Ile Thr Thr Phe Val Thr Pro Leu Leu Asn  
    885                                      890                                      895  
 Pro Phe Ile Tyr Ala Leu Arg Asn Glu Gln Val Lys Glu Ala Leu Lys  
    900                                      905                                      910  
 Asp Met Phe Arg Lys Gly Cys Asp Phe Ala Phe Glu Arg Cys Asn Ser  
    915                                      920                                      925  
 Ala Cys Asn Cys Arg Lys Gly Ser Leu Thr Thr Thr Thr Lys Ser Ala  
    930                                      935                                      940  
 Thr Leu Arg Cys Gly Ala Gly Ala Lys Ala Arg Ala Gly Ala Arg Leu  
    945                                      950                                      955                                      960  
 His Pro Ala Ala Gly Ser Pro Arg Asp Ser Arg Lys Val Asn Val Arg  
    965                                      970                                      975  
 Val Gln Lys Asp Pro Arg Arg Ser Val Pro Lys Val Glu Thr Phe Ile  
    980                                      985                                      990  
 Ser Gly Ser Gly Pro Ser Cys Val Gly Gln Cys Thr Gly Arg Val Cys  
    995                                      1000                                      1005  
 Ile Leu Lys Gly Thr Arg Thr Ile Ser Gly Gly Leu Trp Leu Glu Asp  
    1010                                      1015                                      1020  
 Pro Arg Lys Thr Arg Thr Thr Asp Phe Thr His Arg Lys Ile Lys Val  
    1025                                      1030                                      1035                                      1040  
 Thr Ala Gly Leu Ala Gly Glu Lys Val Glu Pro Thr Leu Pro Arg Cys  
    1045                                      1050                                      1055

<210> 361

<211> 313

<212> PRT

<213> Homo sapiens

<400> 361

Met Ala Asn Leu Ser Gln Pro Ser Glu Phe Val Leu Leu Gly Phe Ser  
 1                                      5                                      10                                      15

Ser Phe Gly Glu Leu Gln Ala Leu Leu Tyr Gly Pro Phe Leu Met Leu  
 20 25 30  
 Tyr Leu Leu Ala Phe Met Gly Asn Thr Ile Ile Ile Val Met Val Ile  
 35 40 45  
 Ala Asp Thr His Leu His Thr Pro Met Tyr Phe Phe Leu Gly Asn Phe  
 50 55 60  
 Ser Leu Leu Glu Ile Leu Val Thr Met Thr Ala Val Pro Arg Met Leu  
 65 70 75 80  
 Ser Asp Leu Leu Val Pro His Lys Val Ile Thr Phe Thr Gly Cys Met  
 85 90 95  
 Val Gln Phe Tyr Phe His Phe Ser Leu Gly Ser Thr Ser Phe Leu Ile  
 100 105 110  
 Leu Thr Asp Met Ala Leu Asp Arg Phe Val Ala Ile Cys His Pro Leu  
 115 120 125  
 Arg Tyr Gly Thr Leu Met Ser Arg Ala Met Cys Val Gln Leu Ala Gly  
 130 135 140  
 Ala Ala Trp Ala Ala Pro Phe Leu Ala Met Val Pro Thr Val Leu Ser  
 145 150 155 160  
 Arg Ala His Leu Asp Tyr Cys His Gly Asp Val Ile Asn His Phe Phe  
 165 170 175  
 Cys Asp Asn Glu Pro Leu Leu Gln Leu Ser Cys Ser Asp Thr Arg Leu  
 180 185 190  
 Leu Glu Phe Trp Asp Phe Leu Met Ala Leu Thr Phe Val Leu Ser Ser  
 195 200 205  
 Phe Leu Val Thr Leu Ile Ser Tyr Gly Tyr Ile Val Thr Thr Val Leu  
 210 215 220  
 Arg Ile Pro Ser Ala Ser Ser Cys Gln Lys Ala Phe Ser Thr Cys Gly  
 225 230 235 240  
 Ser His Leu Thr Leu Val Phe Ile Gly Tyr Ser Ser Thr Ile Phe Leu  
 245 250 255  
 Tyr Val Arg Pro Gly Lys Ala His Ser Val Gln Val Arg Lys Val Val  
 260 265 270

Ala Leu Val Thr Ser Val Leu Thr Pro Phe Leu Asn Pro Phe Ile Leu  
275 280 285

Thr Phe Cys Asn Gln Thr Val Lys Thr Val Leu Gln Gly Gln Met Gln  
290 295 300

Arg Leu Lys Gly Leu Cys Lys Ala Gln  
305 310

<210> 362

<211> 347

<212> PRT

<213> Homo sapiens

<400> 362

Met Gly Asn Trp Thr Ala Ala Val Thr Glu Phe Val Leu Leu Gly Phe  
1 5 10 15

Ser Leu Ser Arg Glu Val Glu Leu Leu Leu Val Leu Leu Leu Pro  
20 25 30

Thr Phe Leu Leu Thr Leu Leu Gly Asn Leu Leu Ile Ile Ser Thr Val  
35 40 45

Leu Ser Cys Ser Arg Leu His Thr Pro Met Tyr Phe Phe Leu Cys Asn  
50 55 60

Leu Ser Ile Leu Asp Ile Leu Phe Thr Ser Val Ile Ser Pro Lys Val  
65 70 75 80

Leu Ala Asn Leu Gly Ser Arg Asp Lys Thr Ile Ser Phe Ala Gly Cys  
85 90 95

Ile Thr Gln Cys Tyr Phe Tyr Phe Phe Leu Gly Thr Val Glu Phe Leu  
100 105 110

Leu Leu Thr Val Met Ser Tyr Asp Arg Tyr Ala Thr Ile Cys Cys Pro  
115 120 125

Leu Arg Tyr Thr Thr Ile Met Arg Pro Ser Val Cys Ile Gly Thr Val  
130 135 140

Val Phe Ser Trp Val Gly Gly Phe Leu Ser Val Leu Phe Pro Thr Ile  
145 150 155 160

Leu Ile Ser Gln Leu Pro Phe Cys Gly Ser Asn Ile Ile Asn His Phe  
165 170 175



Phe Cys Asp Ser Gly Pro Leu Leu Ala Leu Ala Cys Ala Asp Thr Thr  
 180 185 190  
 Ala Ile Glu Leu Met Asp Phe Met Leu Ser Ser Met Val Ile Leu Cys  
 195 200 205  
 Cys Ile Val Leu Val Ala Tyr Ser Tyr Thr Tyr Ile Ile Leu Thr Ile  
 210 215 220  
 Val Arg Ile Pro Ser Ala Ser Gly Arg Lys Lys Ala Phe Asn Thr Cys  
 225 230 235 240  
 Ala Ser His Leu Thr Ile Val Ile Ile Pro Ser Gly Ile Thr Val Phe  
 245 250 255  
 Ile Tyr Val Thr Pro Ser Gln Lys Glu Tyr Leu Glu Ile Asn Lys Ile  
 260 265 270  
 Pro Leu Val Leu Ser Ser Val Val Thr Pro Phe Leu Asn Pro Phe Ile  
 275 280 285  
 Tyr Thr Leu Arg Asn Asp Thr Val Gln Gly Val Leu Arg Asp Val Trp  
 290 295 300  
 Val Arg Val Arg Gly Val Phe Glu Lys Arg Met Arg Ala Val Leu Arg  
 305 310 315 320  
 Ser Arg Leu Ser Ser Asn Lys Asp His Gln Gly Arg Ala Cys Ser Ser  
 325 330 335  
 Pro Pro Cys Val Tyr Ser Val Lys Leu Gln Cys  
 340 345

<210> 363

<211> 246

<212> PRT

<213> Homo sapiens

<400> 363

Ile Ile Ser Phe Ile Cys Leu Asp Ser Arg Leu His Ser Pro Met Tyr  
 1 5 10 15

Phe Phe Leu Cys Asn Phe Ser Leu Met Glu Met Val Val Thr Ser Thr  
 20 25 30

Val Val His Arg Met Leu Ala Asp Leu Leu Ser Thr His Lys Thr Met



<223> Description of Artificial Sequence: 7tm\_1, 7  
transmembrane receptor domain sequence

<400> 364

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Val Ile Leu Val Ile Leu Arg Thr Lys Lys Leu Arg Thr Pro Thr Asn
  1             5             10             15

Ile Phe Leu Leu Asn Leu Ala Val Ala Asp Leu Leu Phe Leu Leu Thr
      20             25             30

Leu Pro Pro Trp Ala Leu Tyr Tyr Leu Val Gly Gly Asp Trp Val Phe
      35             40             45

Gly Asp Ala Leu Cys Lys Leu Val Gly Ala Leu Phe Val Val Asn Gly
      50             55             60

Tyr Ala Ser Ile Leu Leu Leu Thr Ala Ile Ser Ile Asp Arg Tyr Leu
      65             70             75             80

Ala Ile Val His Pro Leu Arg Tyr Arg Arg Ile Arg Thr Pro Arg Arg
      85             90             95

Ala Lys Val Leu Ile Leu Leu Val Trp Val Leu Ala Leu Leu Leu Ser
      100            105            110

Leu Pro Pro Leu Leu Phe Ser Trp Leu Arg Thr Val Glu Glu Gly Asn
      115            120            125

Thr Thr Val Cys Leu Ile Asp Phe Pro Glu Glu Ser Val Lys Arg Ser
      130            135            140

Tyr Val Leu Leu Ser Thr Leu Val Gly Phe Val Leu Pro Leu Leu Val
      145            150            155            160

Ile Leu Val Cys Tyr Thr Arg Ile Leu Arg Thr Leu Arg Lys Arg Ala
      165            170            175

Arg Ser Gln Arg Ser Leu Lys Arg Arg Ser Ser Ser Glu Arg Lys Ala
      180            185            190

Ala Lys Met Leu Leu Val Val Val Val Phe Val Leu Cys Trp Leu
      195            200            205

Pro Tyr His Ile Val Leu Leu Leu Asp Ser Leu Cys Leu Leu Ser Ile
      210            215            220

Trp Arg Val Leu Pro Thr Ala Leu Leu Ile Thr Leu Trp Leu Ala Tyr
      225            230            235            240

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Val Asn Ser Cys Leu Asn Pro Ile Ile Tyr  
245 250

<210> 365  
<211> 559  
<212> PRT  
<213> Homo sapiens

<400> 365  
Met Ala Pro Thr Leu Gln Gln Ala Tyr Arg Arg Arg Trp Trp Met Ala  
1 5 10 15  
Cys Thr Ala Val Leu Glu Asn Leu Phe Phe Ser Ala Val Leu Leu Gly  
20 25 30  
Trp Gly Ser Leu Leu Ile Ile Leu Lys Asn Glu Gly Phe Tyr Ser Ser  
35 40 45  
Thr Cys Pro Ala Glu Ser Ser Thr Asn Thr Thr Gln Asp Glu Gln Arg  
50 55 60  
Arg Trp Pro Gly Cys Asp Gln Gln Asp Glu Met Leu Asn Leu Gly Phe  
65 70 75 80  
Thr Ile Gly Ser Phe Val Leu Ser Ala Thr Thr Leu Pro Leu Gly Ile  
85 90 95  
Leu Met Asp Arg Phe Gly Pro Arg Pro Val Arg Leu Val Gly Ser Ala  
100 105 110  
Cys Phe Thr Ala Ser Cys Thr Leu Met Ala Leu Ala Ser Arg Asp Val  
115 120 125  
Glu Ala Leu Ser Pro Leu Ile Phe Leu Ala Leu Ser Leu Asn Gly Phe  
130 135 140  
Gly Gly Ile Cys Leu Thr Phe Thr Ser Leu Thr Leu Pro Asn Met Phe  
145 150 155 160  
Gly Asn Leu Arg Ser Thr Leu Met Ala Leu Met Ile Gly Ser Tyr Ala  
165 170 175  
Ser Ser Ala Ile Thr Phe Pro Gly Ile Lys Leu Ile Tyr Asp Ala Gly  
180 185 190  
Val Ala Phe Val Val Ile Met Phe Thr Trp Ser Gly Leu Ala Cys Leu

195  
200  
205

Ile Phe Leu Asn Cys Thr Leu Asn Trp Pro Ile Glu Ala Phe Pro Ala  
210 215 220

Pro Glu Glu Val Asn Tyr Thr Lys Lys Ile Lys Leu Ser Gly Leu Ala  
225 230 235 240

Leu Asp His Lys Val Thr Gly Asp Leu Phe Tyr Thr His Val Thr Thr  
245 250 255

Met Gly Gln Arg Leu Ser Gln Lys Ala Pro Ser Leu Glu Asp Gly Ser  
260 265 270

Asp Ala Phe Met Ser Pro Gln Asp Val Arg Gly Thr Ser Glu Asn Leu  
275 280 285

Pro Glu Arg Ser Val Pro Leu Arg Lys Ser Leu Cys Ser Pro Thr Phe  
290 295 300

Leu Trp Ser Leu Leu Thr Met Gly Met Thr Gln Leu Arg Ile Ile Phe  
305 310 315 320

Tyr Met Ala Ala Val Asn Lys Met Leu Glu Tyr Leu Val Thr Gly Gly  
325 330 335

Gln Glu His Glu Thr Asn Glu Gln Gln Gln Lys Val Ala Glu Thr Val  
340 345 350

Gly Phe Tyr Ser Ser Val Phe Gly Ala Met Gln Leu Leu Cys Leu Leu  
355 360 365

Thr Cys Pro Leu Ile Gly Tyr Ile Met Asp Trp Arg Ile Lys Asp Cys  
370 375 380

Val Asp Ala Pro Thr Gln Gly Thr Val Leu Gly Asp Ala Arg Asp Gly  
385 390 395 400

Val Ala Thr Lys Ser Ile Arg Pro Arg Tyr Cys Lys Ile Gln Lys Leu  
405 410 415

Thr Asn Ala Ile Ser Ala Phe Thr Leu Thr Asn Leu Leu Leu Val Gly  
420 425 430

Phe Gly Ile Thr Cys Leu Ile Asn Asn Leu His Leu Gln Phe Val Thr  
435 440 445

Phe Val Leu His Thr Ile Val Arg Gly Phe Phe His Ser Ala Cys Gly

450                      455                      460  
 Ser Leu Tyr Ala Ala Val Phe Pro Ser Asn His Phe Gly Thr Leu Thr  
 465                      470                      475                      480  
 Gly Leu Gln Ser Leu Ile Ser Ala Val Phe Ala Leu Leu Gln Gln Pro  
                     485                      490                      495  
 Leu Phe Met Ala Met Val Gly Pro Leu Lys Gly Glu Pro Phe Trp Val  
                     500                      505                      510  
 Asn Leu Gly Leu Leu Leu Phe Ser Leu Leu Gly Phe Leu Leu Pro Ser  
                     515                      520                      525  
 Tyr Leu Phe Tyr Tyr Arg Ala Arg Leu Gln Gln Glu Tyr Ala Ala Asn  
                     530                      535                      540  
 Gly Met Gly Pro Leu Lys Val Leu Ser Gly Ser Glu Val Thr Ala  
 545                      550                      555  
  
 <210> 366  
 <211> 654  
 <212> PRT  
 <213> Mus musculus  
  
 <400> 366  
 Met Pro Trp Leu Pro Gly Phe Thr Tyr Leu Trp Arg Gln Asp Gly Ser  
   1                      5                      10                      15  
 Gln Ile His Cys Phe Phe Arg Gly Arg Arg Arg Gly Glu Thr Gly Gly  
                     20                      25                      30  
 Ser Glu Ala Arg Trp Val Trp His Ala Gly Lys Thr Pro Arg Val Asp  
                     35                      40                      45  
 Ala Ile Trp Asn Trp Asp Pro Gly Ser Gln Glu Ile Arg Ser Val Glu  
                     50                      55                      60  
 Ala Pro Gly Arg Leu Cys Val Thr Pro Gly Val Lys Ser Cys Gly Arg  
                     65                      70                      75                      80  
 Gln Val Cys Arg Gly Gln Ser Leu Gly His His Gly Ser His Ala Glu  
                     85                      90                      95  
 Ala Gly Val Pro Gln Arg Trp Trp Met Ala Cys Thr Ala Val Val Glu  
                     100                      105                      110

Asn Leu Phe Phe Ser Ala Val Leu Leu Gly Trp Ala Ser Leu Leu Ile  
 115 120 125  
 Met Leu Lys Lys Glu Gly Phe Tyr Ser Ser Leu Cys Pro Ala Glu Asn  
 130 135 140  
 Arg Thr Asn Thr Thr Gln Asp Glu Gln His Gln Trp Thr Ser Cys Asp  
 145 150 155 160  
 Gln Gln Glu Lys Met Leu Asn Leu Gly Phe Thr Ile Gly Ser Phe Leu  
 165 170 175  
 Leu Ser Ala Thr Thr Leu Pro Leu Gly Ile Leu Met Asp Arg Phe Gly  
 180 185 190  
 Pro Arg Pro Leu Arg Leu Val Gly Ser Ala Cys Phe Ala Ala Ser Cys  
 195 200 205  
 Thr Leu Met Ala Leu Ala Ser Arg Asp Thr Glu Val Leu Ser Pro Leu  
 210 215 220  
 Ile Phe Leu Ala Leu Ser Leu Asn Gly Phe Ala Gly Ile Cys Leu Thr  
 225 230 235 240  
 Phe Thr Ser Leu Thr Leu Pro Asn Met Phe Gly Asn Leu Arg Ser Thr  
 245 250 255  
 Phe Met Ala Leu Met Ile Gly Ser Tyr Ala Ser Ser Ala Ile Thr Phe  
 260 265 270  
 Pro Gly Ile Lys Leu Ile Tyr Asp Ala Gly Val Pro Phe Thr Val Ile  
 275 280 285  
 Met Phe Thr Trp Ser Gly Leu Ala Cys Leu Ile Phe Leu Asn Cys Ala  
 290 295 300  
 Leu Asn Trp Pro Ala Glu Ala Phe Pro Ala Pro Glu Glu Val Asp Tyr  
 305 310 315 320  
 Thr Lys Lys Ile Lys Leu Ile Gly Leu Ala Leu Asp His Lys Val Thr  
 325 330 335  
 Gly Asp Arg Phe Tyr Thr His Val Thr Ile Val Gly Gln Arg Leu Ser  
 340 345 350  
 Gln Lys Ser Pro Ser Leu Glu Glu Gly Ala Asp Ala Phe Ile Ser Ser  
 355 360 365

Pro Asp Ile Pro Gly Thr Ser Glu Glu Thr Pro Glu Lys Ser Val Pro  
 370 375 380

Phe Arg Lys Ser Leu Cys Ser Pro Ile Phe Leu Trp Ser Leu Val Thr  
 385 390 395 400

Met Gly Met Thr Gln Leu Arg Val Ile Phe Tyr Met Gly Ala Met Asn  
 405 410 415

Lys Ile Leu Glu Phe Ile Val Thr Gly Gly Lys Glu Arg Glu Thr Asn  
 420 425 430

Glu Gln Arg Gln Lys Val Glu Glu Thr Val Glu Phe Tyr Ser Ser Ile  
 435 440 445

Phe Gly Val Met Gln Leu Leu Cys Leu Leu Thr Cys Pro Leu Ile Gly  
 450 455 460

Tyr Ile Met Asp Trp Arg Ile Lys Asp Cys Val Asp Ala Pro Thr Glu  
 465 470 475 480

Gly Thr Leu Asn Glu Asn Ala Ser Phe Gly Asp Ala Arg Asp Gly Ala  
 485 490 495

Ser Thr Lys Phe Thr Arg Pro Arg Tyr Arg Lys Val Gln Lys Leu Thr  
 500 505 510

Asn Ala Ile Asn Ala Phe Thr Leu Thr Asn Ile Leu Leu Val Gly Phe  
 515 520 525

Gly Ile Ala Cys Leu Ile Lys Asn Leu His Leu Gln Leu Leu Ala Phe  
 530 535 540

Val Leu His Thr Ile Val Arg Gly Phe Phe His Ser Ala Cys Gly Gly  
 545 550 555 560

Leu Tyr Ala Ala Val Phe Pro Ser Asn His Phe Gly Thr Leu Thr Gly  
 565 570 575

Leu Gln Ser Leu Ile Ser Ala Val Phe Ala Leu Leu Gln Gln Leu Leu  
 580 585 590

Phe Met Ala Met Val Gly Pro Leu His Gly Asp Pro Phe Trp Val Asn  
 595 600 605

Leu Gly Leu Leu Leu Leu Ser Phe Leu Gly Phe Leu Leu Pro Ser Tyr  
 610 615 620



Leu Tyr Tyr Tyr Arg Ser Arg Leu Gln Arg Glu Tyr Ala Thr Asn Leu  
625 630 635 640

Val Asp Pro Gln Lys Val Leu Asn Thr Ser Lys Val Ala Thr  
645 650

<210> 367

<211> 401

<212> PRT

<213> Homo sapiens

<400> 367

Met Phe Gly Asn Leu Arg Ser Thr Leu Met Ala Leu Met Ile Gly Ser  
1 5 10 15

Tyr Ala Ser Ser Ala Ile Thr Phe Pro Gly Ile Lys Leu Ile Tyr Asp  
20 25 30

Ala Gly Val Ala Phe Val Val Ile Met Phe Thr Trp Ser Gly Leu Ala  
35 40 45

Cys Leu Ile Phe Leu Asn Cys Thr Leu Asn Trp Pro Ile Glu Ala Phe  
50 55 60

Pro Ala Pro Glu Glu Val Asn Tyr Thr Lys Lys Ile Lys Leu Ser Gly  
65 70 75 80

Leu Ala Leu Asp His Lys Val Thr Gly Asp Leu Phe Tyr Thr His Val  
85 90 95

Thr Thr Met Gly Gln Arg Leu Ser Gln Lys Ala Pro Ser Leu Glu Asp  
100 105 110

Gly Ser Asp Ala Phe Met Ser Pro Gln Asp Val Arg Gly Thr Ser Glu  
115 120 125

Asn Leu Pro Glu Arg Ser Val Pro Leu Arg Lys Ser Leu Cys Ser Pro  
130 135 140

Thr Phe Leu Trp Ser Leu Leu Thr Met Gly Met Thr Gln Leu Arg Ile  
145 150 155 160

Ile Phe Tyr Met Ala Ala Val Asn Lys Met Leu Glu Tyr Leu Val Thr  
165 170 175

Gly Gly Gln Glu His Glu Thr Asn Glu Gln Gln Gln Lys Val Ala Glu  
180 185 190

Thr Val Gly Phe Tyr Ser Ser Val Phe Gly Ala Met Gln Leu Leu Cys  
 195 200 205  
 Leu Leu Thr Cys Pro Leu Ile Gly Tyr Ile Met Asp Trp Arg Ile Lys  
 210 215 220  
 Asp Cys Val Asp Ala Pro Thr Gln Gly Thr Val Leu Gly Asp Ala Arg  
 225 230 235 240  
 Asp Gly Val Ala Thr Lys Ser Ile Arg Pro Arg Tyr Cys Lys Ile Gln  
 245 250 255  
 Lys Leu Thr Asn Ala Ile Ser Ala Phe Thr Leu Thr Asn Leu Leu Leu  
 260 265 270  
 Val Gly Phe Gly Ile Thr Cys Leu Ile Asn Asn Leu His Leu Gln Phe  
 275 280 285  
 Val Thr Phe Val Leu His Thr Ile Val Arg Gly Phe Phe His Ser Ala  
 290 295 300  
 Cys Gly Ser Leu Tyr Ala Ala Val Phe Pro Ser Asn His Phe Gly Thr  
 305 310 315 320  
 Leu Thr Gly Leu Gln Ser Leu Ile Ser Ala Val Phe Ala Leu Leu Gln  
 325 330 335  
 Gln Pro Leu Phe Met Ala Met Val Gly Pro Leu Lys Gly Glu Pro Phe  
 340 345 350  
 Trp Val Asn Leu Gly Leu Leu Leu Phe Ser Leu Leu Gly Phe Leu Leu  
 355 360 365  
 Pro Ser Tyr Leu Phe Tyr Tyr Arg Ala Arg Leu Gln Gln Glu Tyr Ala  
 370 375 380  
 Ala Asn Gly Met Gly Pro Leu Lys Val Leu Ser Gly Ser Glu Val Thr  
 385 390 395 400  
 Ala

<210> 368

<211> 489

<212> PRT

<213> Homo sapiens

<400> 368

Met Ala Pro Thr Leu Ala Thr Ala His Arg Arg Arg Trp Trp Met Ala  
1 5 10 15  
Cys Thr Pro Val Leu Glu Asn Leu Leu Phe Ser Ala Val Leu Leu Gly  
20 25 30  
Trp Gly Ser Leu Leu Ile Met Leu Lys Ser Glu Gly Phe Tyr Ser Tyr  
35 40 45  
Leu Cys Thr Glu Pro Glu Asn Val Thr Asn Gly Thr Val Gly Gly Thr  
50 55 60  
Ala Glu Pro Gly His Glu Glu Val Ser Trp Met Asn Gly Trp Leu Ser  
65 70 75 80  
Cys Gln Ala Gln Asp Glu Met Leu Asn Leu Ala Phe Thr Val Gly Ser  
85 90 95  
Phe Leu Leu Ser Ala Ile Thr Leu Pro Leu Gly Ile Val Met Asp Lys  
100 105 110  
Tyr Gly Pro Arg Lys Leu Arg Leu Leu Gly Ser Ala Cys Phe Ala Val  
115 120 125  
Ser Cys Leu Leu Ile Ala Tyr Gly Ala Ser Lys Pro Asn Ala Leu Ser  
130 135 140  
Val Leu Ile Phe Ile Ala Leu Ala Leu Asn Gly Phe Gly Gly Met Cys  
145 150 155 160  
Met Thr Phe Thr Ser Leu Thr Leu Pro Asn Met Phe Gly Asp Leu Arg  
165 170 175  
Ser Thr Phe Ile Ala Leu Met Ile Gly Ser Tyr Ala Ser Ser Ala Val  
180 185 190  
Thr Phe Pro Gly Ile Lys Leu Ile Tyr Asp Ala Gly Val Ser Phe Ile  
195 200 205  
Val Val Leu Val Val Trp Ala Gly Cys Ser Gly Leu Val Phe Leu Asn  
210 215 220  
Cys Phe Phe Asn Trp Pro Leu Glu Pro Phe Pro Gly Pro Glu Asp Met  
225 230 235 240  
Asp Tyr Ser Val Lys Ile Lys Phe Ser Trp Leu Gly Phe Asp His Lys



<210> 369

<211> 373

<212> PRT

<213> Homo sapiens

<400> 369

Ile Lys Leu Ile Tyr Asp Ala Gly Val Ser Phe Ile Val Val Leu Val  
1 5 10 15

Val Trp Ala Gly Cys Ser Gly Leu Val Phe Leu Asn Cys Phe Phe Asn  
20 25 30

Trp Pro Leu Glu Pro Phe Pro Gly Pro Glu Asp Met Asp Tyr Ser Val  
35 40 45

Lys Ile Lys Phe Ser Trp Leu Gly Phe Asp His Lys Ile Thr Gly Lys  
50 55 60

Gln Phe Tyr Lys Gln Val Thr Thr Val Gly Arg Arg Leu Ser Val Gly  
65 70 75 80

Ser Ser Met Arg Ser Ala Lys Glu Gln Val Ala Leu Gln Glu Gly His  
85 90 95

Lys Leu Cys Leu Ser Thr Val Asp Leu Glu Val Lys Cys Gln Pro Asp  
100 105 110

Ala Ala Val Val Pro Ser Phe Met His Ser Val Phe Ser Pro Ile Leu  
115 120 125

Leu Leu Ser Leu Val Thr Met Cys Val Thr Gln Leu Arg Leu Ile Phe  
130 135 140

Tyr Met Gly Ala Met Asn Asn Ile Leu Lys Phe Leu Val Ser Gly Asp  
145 150 155 160

Gln Lys Thr Val Gly Leu Tyr Thr Ser Ile Phe Gly Val Leu Gln Leu  
165 170 175

Leu Cys Leu Leu Thr Ala Pro Val Ile Gly Tyr Ile Met Asp Trp Arg  
180 185 190

Leu Lys Glu Cys Glu Asp Ala Ser Glu Glu Pro Glu Glu Lys Asp Ala  
195 200 205

Asn Gln Gly Glu Lys Lys Lys Lys Arg Asp Arg Gln Ile Gln Lys  
210 215 220

Ile Thr Asn Ala Met Arg Ala Phe Ala Phe Thr Asn Leu Leu Leu Val  
 225 230 235 240  
 Gly Phe Gly Val Thr Cys Leu Ile Pro Asn Leu Pro Leu Gln Ile Leu  
 245 250 255  
 Ser Phe Ile Leu His Thr Ile Val Arg Gly Phe Ile His Ser Ala Val  
 260 265 270  
 Gly Gly Leu Tyr Ala Ala Val Tyr Pro Ser Thr Gln Phe Gly Ser Leu  
 275 280 285  
 Thr Gly Leu Gln Ser Leu Ile Ser Ala Leu Phe Ala Leu Leu Gln Gln  
 290 295 300  
 Pro Leu Phe Leu Ala Met Met Gly Pro Leu Gln Gly Asp Pro Leu Trp  
 305 310 315 320  
 Val Asn Val Gly Leu Leu Leu Ser Leu Leu Gly Phe Cys Leu Pro  
 325 330 335  
 Leu Tyr Leu Ile Cys Tyr Arg Arg Gln Leu Glu Arg Gln Leu Gln Gln  
 340 345 350  
 Arg Gln Glu Asp Asp Lys Leu Phe Leu Lys Ile Asn Gly Ser Ser Asn  
 355 360 365  
 Gln Glu Ala Phe Val  
 370

<210> 370  
 <211> 125  
 <212> PRT  
 <213> Homo sapiens

<400> 370  
 Met Ala Gly Pro Ser Leu Ala Cys Cys Leu Leu Gly Leu Leu Ala Leu  
 1 5 10 15  
 Thr Ser Ala Cys Tyr Ile Gln Asn Cys Pro Leu Gly Gly Lys Arg Ala  
 20 25 30  
 Ala Pro Asp Leu Asp Val Arg Lys Cys Leu Pro Cys Gly Pro Gly Gly  
 35 40 45  
 Lys Gly Arg Cys Phe Gly Pro Asn Ile Cys Cys Ala Glu Glu Leu Gly  
 50 55 60

Cys Phe Val Gly Thr Ala Glu Ala Leu Arg Cys Gln Glu Glu Asn Tyr  
65 70 75 80

Leu Pro Ser Pro Cys Gln Ser Gly Gln Lys Ala Cys Gly Ser Gly Gly  
85 90 95

Arg Cys Ala Val Leu Gly Leu Cys Cys Ser Pro Asp Gly Cys His Ala  
100 105 110

Asp Pro Ala Cys Asp Ala Glu Ala Thr Phe Ser Gln Arg  
115 120 125

<210> 371

<211> 124

<212> PRT

<213> Homo sapiens

<400> 371

Met Ala Gly Pro Ser Leu Ala Cys Cys Leu Leu Gly Leu Leu Ala Leu  
1 5 10 15

Thr Ser Ala Cys Tyr Ile Gln Asn Cys Pro Leu Gly Gly Lys Arg Ala  
20 25 30

Ala Pro Asp Leu Asp Val Arg Lys Cys Leu Pro Cys Gly Pro Gly Gly  
35 40 45

Lys Gly Arg Cys Phe Gly Pro Asn Ile Cys Cys Ala Glu Glu Leu Gly  
50 55 60

Cys Phe Val Gly Thr Ala Glu Ala Leu Arg Cys Gln Glu Glu Asn Tyr  
65 70 75 80

Leu Pro Ser Pro Cys Gln Ser Gly Gln Lys Ala Cys Gly Ser Gly Gly  
85 90 95

Arg Cys Ala Leu Gly Leu Cys Cys Ser Pro Asp Gly Cys His Ala Asp  
100 105 110

Pro Ala Cys Asp Ala Glu Ala Thr Phe Ser Gln Arg  
115 120

<210> 372

<211> 125

<212> PRT

<213> *Sus scrofa*

<400> 372

Met Ala Gly Pro Ser Leu Ala Cys Cys Leu Leu Gly Leu Leu Ala Leu  
1 5 10 15  
Thr Ser Ala Cys Tyr Ile Gln Asn Cys Pro Leu Gly Gly Lys Arg Ala  
20 25 30  
Val Leu Asp Leu Asp Val Arg Lys Cys Leu Pro Cys Gly Pro Gly Gly  
35 40 45  
Lys Gly Arg Cys Phe Gly Pro Ser Ile Cys Cys Gly Asp Glu Leu Gly  
50 55 60  
Cys Phe Val Gly Thr Ala Glu Ala Leu Arg Cys Gln Glu Glu Asn Tyr  
65 70 75 80  
Leu Pro Ser Pro Cys Gln Ser Gly Gln Lys Pro Cys Gly Ser Glu Gly  
85 90 95  
Arg Cys Ala Ala Ala Gly Ile Cys Cys Asn Pro Asp Gly Cys Arg Phe  
100 105 110  
Asp Pro Ala Cys Asp Pro Glu Ala Thr Phe Ser Gln Arg  
115 120 125

<210> 373

<211> 125

<212> PRT

<213> *Ovis aries*

<400> 373

Met Ala Gly Ser Ser Leu Ala Cys Cys Leu Leu Gly Leu Leu Ala Leu  
1 5 10 15  
Thr Ser Ala Cys Tyr Ile Gln Asn Cys Pro Leu Gly Gly Lys Arg Ala  
20 25 30  
Val Leu Asp Leu Asp Val Arg Thr Cys Leu Pro Cys Gly Pro Gly Gly  
35 40 45  
Lys Gly Arg Cys Phe Gly Pro Ser Ile Cys Cys Gly Asp Glu Leu Gly  
50 55 60  
Cys Phe Val Gly Thr Ala Glu Ala Leu Arg Cys Arg Glu Glu Asn Tyr  
65 70 75 80



Leu Pro Ser Pro Cys Gln Ser Gly Gln Lys Pro Cys Gly Ser Gly Gly  
85 90 95

Arg Cys Ala Ala Ala Gly Ile Cys Cys Ser Pro Asp Gly Cys His Ala  
100 105 110

Asp Pro Ala Cys Asp Pro Glu Ala Ala Phe Ser Gln His  
115 120 125

<210> 374

<211> 125

<212> PRT

<213> Bos taurus

<400> 374

Met Ala Gly Ser Ser Leu Ala Cys Cys Leu Leu Gly Leu Leu Ala Leu  
1 5 10 15

Thr Ser Ala Cys Tyr Ile Gln Asn Cys Pro Leu Gly Gly Lys Arg Ala  
20 25 30

Val Leu Asp Leu Asp Val Arg Thr Cys Leu Pro Cys Gly Pro Gly Gly  
35 40 45

Lys Gly Arg Cys Phe Gly Pro Ser Ile Cys Cys Gly Asp Glu Leu Gly  
50 55 60

Cys Phe Val Gly Thr Ala Glu Ala Leu Arg Cys Gln Glu Glu Asn Tyr  
65 70 75 80

Leu Pro Ser Pro Cys Gln Ser Gly Gln Lys Pro Cys Gly Ser Gly Gly  
85 90 95

Arg Cys Ala Ala Ala Gly Ile Cys Cys Ser Pro Asp Gly Cys His Glu  
100 105 110

Asp Pro Ala Cys Asp Pro Glu Ala Ala Phe Ser Gln His  
115 120 125

<210> 375

<211> 56

<212> PRT

<213> Homo sapiens

<400> 375

Glu Glu Leu Gly Cys Phe Val Gly Thr Ala Glu Ala Leu Arg Cys Gln  
 1 5 10 15

Glu Glu Asn Tyr Leu Pro Ser Pro Cys Gln Ser Gly Gln Lys Ala Cys  
 20 25 30

Gly Ser Gly Gly Arg Cys Ala Val Leu Gly Leu Cys Cys Ser Pro Asp  
 35 40 45

Gly Cys His Ala Asp Pro Ala Cys  
 50 55

<210> 376

<211> 57

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:

Neurohypophysial hormones domain sequence

<400> 376

Glu Glu Leu Gly Cys Tyr Val Gly Thr Pro Glu Thr Ala Arg Cys Gln  
 1 5 10 15

Glu Glu Asn Tyr Leu Pro Ser Pro Cys Glu Ala Gly Gly Lys Pro Cys  
 20 25 30

Gly Ser Asp Ala Gly Arg Cys Ala Ala Pro Gly Val Cys Cys Asp Ser  
 35 40 45

Glu Ser Cys Val Val Asp Pro Glu Cys  
 50 55

<210> 377

<211> 56

<212> PRT

<213> Homo sapiens

<400> 377

Glu Glu Leu Gly Cys Phe Val Gly Thr Ala Glu Ala Leu Arg Cys Gln  
 1 5 10 15

Glu Glu Asn Tyr Leu Pro Ser Pro Cys Gln Ser Gly Gln Lys Ala Cys  
 20 25 30

Gly Ser Gly Gly Arg Cys Ala Val Leu Gly Leu Cys Cys Ser Pro Asp  
35 40 45

Gly Cys His Ala Asp Pro Ala Cys  
50 55

<210> 378

<211> 57

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:  
Neurohypophysial hormones domain sequence

<400> 378

Glu Glu Leu Gly Cys Tyr Val Gly Thr Pro Glu Thr Ala Arg Cys Gln  
1 5 10 15

Glu Glu Asn Tyr Leu Pro Ser Pro Cys Glu Ser Gly Gly Arg Pro Cys  
20 25 30

Gly Ser Asp Gly Gly Arg Cys Ala Ala Pro Gly Ile Cys Cys Asp Ser  
35 40 45

Glu Ser Cys Ala Ala Asp Pro Ser Cys  
50 55

<210> 379

<211> 158

<212> PRT

<213> Homo sapiens

<400> 379

Met Ser Asp Lys Ser Asn Met Asp Glu Ile Glu Lys Phe Ser Lys Ser  
1 5 10 15

Lys Leu Lys Lys Thr Glu Met Gln Glu Lys Asn Pro Gln Pro Ser Lys  
20 25 30

Glu Trp Ile Glu Gln Glu Lys Gln Ala Gly Phe Cys Ala Met Ala Ala  
35 40 45

Asn Ser Ser Phe Leu Gly Gly Val His Gly Leu Phe Leu Val Trp Val  
50 55 60

Ala Leu Arg Val Leu Gly Asp Arg Pro Phe Lys Cys Thr Phe Met Ser  
65 70 75 80

Leu Thr Leu His Tyr Pro Arg Cys Arg Leu Glu Thr Gly Ile Gln Gly  
85 90 95

Ala Phe Gly Lys Pro Gln Gly Thr Val Ala Arg Val His Ile Gly Gln  
100 105 110

Val Lys Ser Ile Cys Thr Lys Leu Gln Asn Lys Glu His Val Ile Glu  
115 120 125

Ala Pro Cys Arg Ala Lys Phe Lys Phe Pro Gly His Gln Lys Ile His  
130 135 140

Ile Ser Lys Lys Trp Gly Phe Thr Lys Phe Asn Val Asp Glu  
145 150 155

<210> 380

<211> 56

<212> PRT

<213> Rattus norvegicus

<400> 380

Leu Phe Ala Gln Leu Ala Gln Leu Leu Pro Ala Thr Met Ser Asp Lys  
1 5 10 15

Pro Asp Met Ala Glu Ile Glu Lys Phe Asp Lys Ser Lys Leu Lys Lys  
20 25 30

Thr Glu Thr Gln Glu Lys Asn Pro Leu Pro Ser Lys Glu Thr Ile Glu  
35 40 45

Gln Glu Lys Gln Ala Gly Glu Ser  
50 55

<210> 381

<211> 50

<212> PRT

<213> Mus musculus

<400> 381

Met Leu Leu Pro Ala Thr Met Ser Asp Lys Pro Asp Met Ala Glu Ile  
1 5 10 15

Glu Lys Phe Asp Lys Ser Lys Leu Lys Lys Thr Glu Thr Gln Glu Lys



1                    5                    10                    15  
 Met Gln Glu Lys Asn Pro Gln Pro Ser Lys Glu Trp Ile Glu Gln Glu  
                   20                    25                    30  
 Lys Gln Ala Gly  
                   35

<210> 385  
 <211> 36  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Thymosin beta  
           actin-binding motif sequence

<400> 385  
 Thr Asp Glu Ile Glu Asn Phe Asp Ser Glu Asn Leu Lys Lys Thr Glu  
   1                    5                    10                    15  
 Thr Ile Glu Lys Asn Val Leu Pro Ser Lys Glu Asp Ile Glu Gln Glu  
                   20                    25                    30  
 Lys Gln Leu Gln  
                   35

<210> 386  
 <211> 41  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Thymosin  
           beta-4 family domain sequence

<400> 386  
 Ser Asp Lys Pro Asp Leu Glu Glu Ile Ala Ser Phe Asp Lys Ala Lys  
   1                    5                    10                    15  
 Leu Lys Lys Thr Glu Thr Gln Glu Lys Asn Pro Leu Pro Thr Lys Glu  
                   20                    25                    30  
 Thr Ile Glu Gln Glu Lys Gln Ala Glu  
                   35                    40

<210> 387  
 <211> 36  
 <212> PRT  
 <213> Homo sapiens

<400> 387  
 Met Asp Glu Ile Glu Lys Phe Ser Lys Ser Lys Leu Lys Lys Thr Glu  
           1                  5                  10                  15  
 Met Gln Glu Lys Asn Pro Gln Pro Ser Lys Glu Trp Ile Glu Gln Glu  
                   20                  25                  30  
 Lys Gln Ala Gly  
           35

<210> 388  
 <211> 132  
 <212> PRT  
 <213> Mus musculus

<400> 388  
 Met Val Asp Gln Leu Gln Gly Thr Trp Lys Ser Val Ser Cys Asp Asn  
           1                  5                  10                  15  
 Phe Glu Asn Tyr Met Lys Glu Leu Gly Val Gly Arg Ala Ser Arg Lys  
                   20                  25                  30  
 Leu Gly Cys Leu Ala Lys Pro Thr Val Thr Ile Ser Thr Asp Gly Asp  
           35                  40                  45  
 Leu Ile Thr Ile Lys Thr Lys Ser Ile Phe Lys Asn Lys Glu Ile Ser  
           50                  55                  60  
 Phe Lys Leu Gly Glu Glu Phe Glu Glu Thr Thr Pro Ser Gly Arg Lys  
           65                  70                  75                  80  
 Ser Lys Ser Thr Val Ile Leu Asp Asn Asp Ser Leu Val Gln Val Gln  
                   85                  90                  95  
 Asp Trp Asp Gly Lys Glu Ala Thr Ile Cys Arg Arg Leu Val Asp Gly  
           100                  105                  110  
 Lys Met Val Val Glu Ser Ala Val Asn Asn Val Thr Cys Thr Arg Thr  
           115                  120                  125  
 Tyr Gln Arg Val

130

<210> 389

<211> 132

<212> PRT

<213> *Oryzctolagus cuniculus*

<400> 389

Met Ser Asn Lys Phe Leu Gly Thr Trp Lys Leu Val Ser Ser Glu Asn  
1 5 10 15

Phe Asp Asp Tyr Met Lys Ala Leu Gly Val Gly Leu Ala Thr Arg Lys  
20 25 30

Leu Gly Asn Leu Ala Lys Pro Asn Val Ile Ile Ser Lys Lys Gly Asp  
35 40 45

Ile Ile Thr Ile Arg Thr Glu Ser Thr Phe Lys Asn Thr Glu Ile Ser  
50 55 60

Phe Lys Leu Gly Gln Glu Phe Glu Glu Thr Thr Ala Asp Asn Arg Lys  
65 70 75 80

Thr Lys Ser Ile Ile Thr Leu Glu Arg Gly Ala Leu Asn Gln Val Gln  
85 90 95

Lys Trp Asp Gly Lys Glu Thr Thr Ile Lys Arg Lys Leu Val Asp Gly  
100 105 110

Lys Met Val Val Glu Cys Lys Met Lys Gly Val Val Cys Thr Arg Ile  
115 120 125

Tyr Glu Lys Val  
130

<210> 390

<211> 132

<212> PRT

<213> *Homo sapiens*

<400> 390

Met Ser Asn Lys Phe Leu Gly Thr Trp Lys Leu Val Ser Ser Glu Asn  
1 5 10 15

Phe Asp Asp Tyr Met Lys Ala Leu Gly Val Gly Leu Ala Thr Arg Lys  
20 25 30



Leu Gly Asn Leu Ala Lys Pro Thr Val Ile Ile Ser Lys Lys Gly Asp  
35 40 45

Ile Ile Thr Ile Arg Thr Glu Ser Thr Phe Lys Asn Thr Glu Ile Ser  
50 55 60

Phe Lys Leu Gly Gln Glu Phe Glu Glu Thr Thr Ala Asp Asn Arg Lys  
65 70 75 80

Thr Lys Ser Ile Val Thr Leu Gln Arg Gly Ser Leu Asn Gln Val Gln  
85 90 95

Arg Trp Asp Gly Lys Glu Thr Thr Ile Lys Arg Lys Leu Val Asn Gly  
100 105 110

Lys Met Val Ala Glu Cys Lys Met Lys Gly Val Val Cys Thr Arg Ile  
115 120 125

Tyr Glu Lys Val  
130

<210> 391

<211> 132

<212> PRT

<213> Mus musculus

<400> 391

Met Ser Asn Lys Phe Leu Gly Thr Trp Lys Leu Val Ser Ser Glu His  
1 5 10 15

Phe Asp Asp Tyr Met Lys Ala Leu Gly Val Gly Leu Ala Asn Arg Lys  
20 25 30

Leu Gly Asn Leu Ala Lys Pro Thr Val Ile Ile Ser Lys Lys Gly Asp  
35 40 45

Tyr Ile Thr Ile Arg Thr Glu Ser Ala Phe Lys Asn Thr Glu Ile Ser  
50 55 60

Phe Lys Leu Gly Gln Glu Phe Asp Glu Thr Thr Ala Asp Asn Arg Lys  
65 70 75 80

Ala Lys Ser Ile Val Thr Leu Glu Arg Gly Ser Leu Lys Gln Val Gln  
85 90 95

Lys Trp Asp Gly Lys Glu Thr Ala Ile Arg Arg Thr Leu Leu Asp Gly

100	105	110
Arg Met Val Val Glu Cys Ile Met Lys Gly Val Val Cys Thr Arg Ile		
115	120	125
Tyr Glu Lys Val		
130		
<210> 392		
<211> 132		
<212> PRT		
<213> Bos taurus		
<400> 392		
Met Cys Asp Ala Phe Val Gly Thr Trp Lys Leu Val Ser Ser Glu Asn		
1	5	10 15
Phe Asp Asp Tyr Met Lys Glu Val Gly Val Gly Phe Ala Thr Arg Lys		
20	25	30
Val Ala Gly Met Ala Lys Pro Thr Leu Ile Ile Ser Leu Asn Gly Gly		
35	40	45
Val Val Thr Ile Lys Ser Glu Ser Thr Phe Lys Asn Thr Glu Ile Ser		
50	55	60
Phe Lys Leu Gly Gln Glu Phe Asp Glu Ile Thr Pro Asp Asp Arg Lys		
65	70	75 80
Val Lys Ser Ile Val Asn Leu Asp Glu Gly Ala Leu Val Gln Val Gln		
85	90	95
Asn Trp Asp Gly Lys Ser Thr Thr Ile Lys Arg Lys Leu Met Asp Asp		
100	105	110
Lys Met Val Leu Glu Cys Val Met Asn Gly Val Thr Ala Thr Arg Val		
115	120	125
Tyr Glu Arg Ala		
130		
<210> 393		
<211> 129		
<212> PRT		
<213> Homo sapiens		

<400> 393

Gln Leu Gln Gly Thr Trp Lys Ser Ile Ser Cys Glu Asn Ser Glu Asp  
1 5 10 15

Tyr Met Lys Glu Leu Gly Ile Gly Arg Ala Ser Arg Lys Leu Gly Arg  
20 25 30

Leu Ala Lys Pro Thr Val Thr Ile Ser Thr Asp Gly Asp Val Ile Thr  
35 40 45

Ile Lys Thr Lys Ser Ile Phe Lys Asn Asn Glu Ile Ser Phe Lys Leu  
50 55 60

Gly Glu Glu Phe Glu Glu Ile Thr Pro Gly Gly His Lys Thr Lys Ser  
65 70 75 80

Lys Val Thr Leu Asp Lys Glu Ser Leu Ile Gln Val Gln Asp Trp Asp  
85 90 95

Gly Lys Glu Thr Thr Ile Thr Arg Lys Leu Val Asp Gly Lys Met Val  
100 105 110

Val Glu Ser Thr Val Asn Ser Val Ile Cys Thr Arg Thr Tyr Glu Lys  
115 120 125

Val

<210> 394

<211> 145

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: lipocalin  
domain sequence

<400> 394

Lys Phe Ala Gly Lys Trp Tyr Leu Val Ala Ser Ala Asn Phe Asp Pro  
1 5 10 15

Glu Leu Lys Glu Glu Leu Gly Val Leu Glu Ala Thr Arg Lys Glu Ile  
20 25 30

Thr Pro Leu Lys Glu Gly Asn Leu Glu Ile Val Phe Asp Gly Asp Lys  
35 40 45

Asn Gly Ile Cys Glu Glu Thr Phe Gly Lys Leu Glu Lys Thr Lys Lys  
 50 55 60

Leu Gly Val Glu Phe Asp Tyr Tyr Thr Gly Asp Asn Arg Phe Val Val  
 65 70 75 80

Leu Asp Thr Asp Tyr Asp Asn Tyr Leu Leu Val Cys Val Gln Lys Gly  
 85 90 95

Asp Gly Asn Glu Thr Ser Arg Thr Ala Glu Leu Tyr Gly Arg Thr Pro  
 100 105 110

Glu Leu Ser Pro Glu Ala Leu Glu Leu Phe Glu Thr Ala Thr Lys Glu  
 115 120 125

Leu Gly Ile Pro Glu Asp Asn Val Val Cys Thr Arg Gln Thr Glu Arg  
 130 135 140

Cys  
 145

<210> 395

<211> 132

<212> PRT

<213> Homo sapiens

<400> 395

Met Val Glu Pro Phe Leu Gly Thr Trp Lys Leu Val Ser Ser Glu Asn  
 1 5 10 15

Phe Glu Asp Tyr Met Lys Glu Leu Gly Val Asn Phe Ala Ala Arg Asn  
 20 25 30

Met Ala Gly Leu Val Lys Pro Thr Val Thr Ile Ser Val Asp Gly Lys  
 35 40 45

Met Met Thr Ile Arg Thr Glu Ser Ser Phe Gln Asp Thr Lys Ile Ser  
 50 55 60

Phe Lys Leu Gly Glu Glu Phe Asp Glu Thr Thr Ala Asp Asn Arg Lys  
 65 70 75 80

Val Lys Ser Thr Ile Thr Leu Glu Asn Gly Ser Met Ile His Val Gln  
 85 90 95

Lys Trp Leu Gly Lys Glu Thr Thr Ile Lys Arg Lys Ile Val Asp Glu  
 100 105 110

Lys Met Val Val Glu Cys Lys Met Asn Asn Ile Val Ser Thr Arg Ile  
115 120 125

Tyr Glu Lys Val  
130

<210> 396

<211> 132

<212> PRT

<213> Mus musculus

<400> 396

Met Ile Glu Pro Phe Leu Gly Thr Trp Lys Leu Ile Ser Ser Glu Asn  
1 5 10 15

Phe Glu Asn Tyr Val Arg Glu Leu Gly Val Glu Cys Glu Pro Arg Lys  
20 25 30

Val Ala Cys Leu Ile Lys Pro Ser Val Ser Ile Ser Phe Asn Gly Glu  
35 40 45

Arg Met Asp Ile Gln Ala Gly Ser Ala Cys Arg Asn Thr Glu Ile Ser  
50 55 60

Phe Lys Leu Gly Glu Glu Phe Glu Glu Thr Thr Ala Asp Asn Arg Lys  
65 70 75 80

Val Lys Ser Leu Ile Thr Phe Glu Gly Gly Ser Met Ile Gln Val Gln  
85 90 95

Lys Trp Leu Gly Lys Gln Thr Thr Ile Lys Arg Lys Ile Val Asp Gly  
100 105 110

Lys Met Val Val Glu Cys Thr Met Asn Asn Val Val Ser Thr Arg Ile  
115 120 125

Tyr Glu Arg Val  
130

<210> 397

<211> 132

<212> PRT

<213> Mus musculus

<400> 397

Met Ile Glu Pro Phe Leu Gly Thr Trp Lys Leu Val Ser Ser Glu Asn  
 1 5 10 15  
 Phe Glu Asn Tyr Val Arg Glu Leu Gly Val Glu Cys Glu Pro Arg Lys  
 20 25 30  
 Val Ala Cys Leu Ile Lys Pro Ser Val Ser Ile Ser Phe Asn Gly Glu  
 35 40 45  
 Arg Met Asp Ile Gln Ala Gly Ser Ala Cys Arg Asn Thr Lys Ile Ser  
 50 55 60  
 Phe Lys Leu Gly Glu Glu Phe Glu Glu Thr Thr Ala Asp Asn Arg Lys  
 65 70 75 80  
 Val Lys Ser Leu Ile Thr Phe Glu Gly Gly Ser Met Ile Gln Ile Gln  
 85 90 95  
 Arg Trp Leu Gly Lys Gln Thr Thr Ile Lys Arg Arg Ile Val Asp Gly  
 100 105 110  
 Arg Met Val Val Glu Cys Thr Met Asn Asn Val Val Ser Thr Arg Thr  
 115 120 125  
 Tyr Glu Arg Val  
 130

<210> 398  
 <211> 132  
 <212> PRT  
 <213> Rattus norvegicus

<400> 398  
 Met Ile Glu Pro Phe Leu Gly Thr Trp Lys Leu Val Ser Ser Glu Asn  
 1 5 10 15  
 Phe Glu Asn Tyr Val Arg Glu Leu Gly Val Glu Cys Glu Pro Arg Lys  
 20 25 30  
 Val Ala Cys Leu Ile Lys Pro Ser Val Ser Ile Ser Phe Asn Gly Glu  
 35 40 45  
 Arg Met Asp Ile Gln Ala Gly Ser Ala Cys Arg Asn Thr Glu Ile Ser  
 50 55 60  
 Phe Lys Leu Gly Glu Glu Phe Glu Glu Thr Thr Ala Asp Asn Arg Lys  
 65 70 75 80

Val Lys Ser Leu Ile Thr Phe Glu Gly Gly Ser Met Ile Gln Ile Gln  
85 90 95

Arg Trp Leu Gly Lys Gln Thr Thr Ile Lys Arg Arg Ile Val Asp Gly  
100 105 110

Arg Met Val Val Glu Cys Thr Met Asn Asn Val Val Ser Thr Arg Thr  
115 120 125

Tyr Glu Arg Val  
130

<210> 399

<211> 132

<212> PRT

<213> Sus scrofa

<400> 399

Met Cys Asp Ala Phe Val Gly Thr Trp Lys Leu Val Ser Ser Glu Asn  
1 5 10 15

Phe Asp Asp Tyr Met Lys Glu Val Gly Val Gly Phe Ala Thr Arg Lys  
20 25 30

Val Ala Gly Met Ala Lys Pro Asn Leu Ile Ile Thr Val Asn Gly Asp  
35 40 45

Met Ile Thr Ile Arg Ser Glu Ser Thr Phe Lys Asn Thr Glu Ile Ala  
50 55 60

Phe Lys Leu Gly Gln Glu Phe Asp Glu Val Thr Ala Asp Asp Arg Lys  
65 70 75 80

Val Lys Ser Thr Ile Thr Leu Asp Gly Gly Ala Leu Val Gln Val Gln  
85 90 95

Lys Trp Asp Gly Lys Thr Thr Thr Ile Asn Arg Lys Ile Val Asp Asp  
100 105 110

Lys Leu Val Val Glu Cys Ile Met Lys Gly Val Thr Ala Thr Arg Ile  
115 120 125

Tyr Glu Arg Ala  
130

<210> 400  
 <211> 124  
 <212> PRT  
 <213> Homo sapiens

<400> 400  
 Phe Leu Gly Thr Trp Lys Leu Val Ser Ser Glu Asn Phe Glu Asp Tyr  
   1                  5                  10                  15  
 Met Lys Glu Leu Gly Phe Ala Ala Arg Asn Met Ala Gly Leu Val Lys  
                   20                  25                  30  
 Pro Thr Val Thr Ile Ser Val Asp Gly Lys Met Met Thr Ile Arg Thr  
           35                  40                  45  
 Glu Ser Ser Phe Gln Asp Thr Lys Ile Ser Phe Lys Leu Gly Glu Glu  
       50                  55                  60  
 Phe Asp Glu Thr Thr Ala Asp Asn Arg Lys Val Lys Ser Thr Ile Thr  
   65                  70                  75                  80  
 Leu Glu Asn Gly Ser Met Ile His Val Gln Lys Trp Leu Gly Lys Glu  
                   85                  90                  95  
 Thr Thr Ile Lys Arg Lys Ile Val Asp Glu Lys Met Val Val Glu Cys  
           100                  105                  110  
 Lys Met Asn Asn Ile Val Ser Thr Arg Ile Tyr Glu  
       115                  120

<210> 401  
 <211> 127  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: lipocalin  
       domain sequence

<400> 401  
 Phe Ala Gly Lys Trp Tyr Leu Val Ala Ser Ala Asn Phe Asp Pro Glu  
   1                  5                  10                  15  
 Leu Lys Glu Glu Leu Gly Val Leu Glu Ala Thr Arg Lys Glu Ile Thr  
           20                  25                  30  
 Pro Leu Lys Glu Gly Asn Leu Glu Ile Val Phe Asp Gly Asp Lys Asn



35	40	45
Gly Ile Cys Glu Glu Thr Phe Gly Lys Leu Glu Lys Thr Lys Lys Leu		
50	55	60
Gly Val Glu Phe Asp Tyr Tyr Thr Gly Asp Asn Arg Phe Val Val Leu		
65	70	75
80		
Asp Thr Asp Tyr Asp Asn Tyr Leu Leu Val Cys Val Gln Lys Gly Asp		
85	90	95
Gly Asn Glu Thr Ser Arg Thr Ala Glu Leu Tyr Gly Arg Thr Pro Glu		
100	105	110
Leu Ser Pro Glu Ala Leu Glu Leu Phe Glu Thr Ala Thr Lys Glu		
115	120	125

<210> 402

<211> 391

<212> PRT

<213> Homo sapiens

<400> 402

His Gln Ala Ala His Gln Pro Phe Pro Arg Pro Arg Phe Arg Gln Glu
1 5 10 15
Thr Gly His Pro Ser Leu Gln Arg Asp Phe Pro Arg Ser Phe Leu Leu
20 25 30
Asp Leu Pro Asn Phe Pro Asp Leu Ser Lys Ala Asp Ile Asn Gly Gln
35 40 45
Asn Pro Asn Ile Gln Val Thr Ile Glu Val Val Asp Gly Pro Asp Ser
50 55 60
Glu Ala Asp Lys Asp Gln His Pro Glu Asn Lys Pro Ser Trp Ser Val
65 70 75 80
Pro Ser Pro Asp Trp Arg Ala Trp Trp Gln Arg Ser Leu Ser Leu Ala
85 90 95
Arg Ala Asn Ser Gly Asp Gln Asp Tyr Lys Tyr Asp Ser Thr Ser Asp
100 105 110
Asp Ser Asn Phe Leu Asn Pro Pro Arg Gly Trp Asp His Thr Ala Pro
115 120 125

Gly His Arg Thr Phe Glu Thr Lys Asp Gln Pro Glu Tyr Asp Ser Thr  
 130 135 140  
 Asp Gly Glu Gly Asp Trp Ser Leu Trp Ser Val Cys Ser Val Thr Cys  
 145 150 155 160  
 Gly Asn Gly Asn Gln Lys Arg Thr Arg Ser Cys Gly Tyr Ala Cys Thr  
 165 170 175  
 Ala Thr Glu Ser Arg Thr Cys Asp Arg Pro Asn Cys Pro Gly Ile Glu  
 180 185 190  
 Asp Thr Phe Arg Thr Ala Ala Thr Glu Val Ser Leu Leu Ala Gly Ser  
 195 200 205  
 Glu Glu Phe Asn Ala Thr Lys Leu Phe Glu Val Asp Thr Asp Ser Cys  
 210 215 220  
 Glu Arg Trp Met Ser Cys Lys Ser Glu Phe Leu Lys Lys Tyr Met His  
 225 230 235 240  
 Lys Val Met Asn Asp Leu Pro Ser Cys Pro Cys Ser Tyr Pro Thr Glu  
 245 250 255  
 Val Ala Tyr Ser Thr Ala Asp Ile Phe Asp Arg Ile Lys Arg Lys Asp  
 260 265 270  
 Phe Arg Trp Lys Asp Ala Ser Gly Pro Lys Glu Lys Leu Glu Ile Tyr  
 275 280 285  
 Lys Pro Thr Ala Arg Tyr Cys Ile Arg Ser Met Leu Ser Leu Glu Ser  
 290 295 300  
 Thr Thr Leu Ala Ala Gln His Cys Cys Tyr Gly Asp Asn Met Gln Leu  
 305 310 315 320  
 Ile Thr Arg Gly Lys Gly Ala Gly Thr Pro Asn Leu Ile Ser Thr Glu  
 325 330 335  
 Phe Ser Ala Glu Leu His Tyr Lys Val Asp Val Leu Pro Trp Ile Ile  
 340 345 350  
 Cys Lys Gly Asp Trp Ser Arg Tyr Asn Glu Ala Arg Pro Pro Asn Asn  
 355 360 365  
 Gly Gln Lys Cys Thr Glu Ser Pro Ser Asp Glu Asp Tyr Ile Lys Gln  
 370 375 380

Phe Gln Glu Ala Arg Glu Tyr  
385 390

<210> 403

<211> 538

<212> PRT

<213> Homo sapiens

<400> 403

Val His Ser His Gly Asp Lys Asp Ser Gln Thr Cys Ile Arg Val Ser  
1 5 10 15  
Ala Ser Pro Asp Pro Arg Pro Leu Lys Glu Glu Glu Glu Ala Pro Leu  
20 25 30  
Leu Pro Arg Thr His Leu Gln Ala Glu Pro His Gln His Gly Cys Trp  
35 40 45  
Thr Val Thr Glu Pro Ala Ala Met Thr Pro Gly Asn Ala Thr Pro Pro  
50 55 60  
Arg Thr Pro Glu Val Thr Pro Leu Arg Leu Glu Leu Gln Lys Leu Pro  
65 70 75 80  
Gly Leu Ala Asn Thr Thr Leu Ser Thr Pro Asn Pro Asp Thr Gln Ala  
85 90 95  
Ser Ala Ser Pro Asp Pro Arg Pro Leu Arg Glu Glu Glu Glu Ala Arg  
100 105 110  
Leu Leu Pro Arg Thr His Leu Gln Ala Glu Leu His Gln His Gly Cys  
115 120 125  
Trp Thr Val Thr Glu Pro Ala Ala Leu Thr Pro Gly Asn Ala Thr Pro  
130 135 140  
Pro Arg Thr Gln Glu Val Thr Pro Leu Leu Leu Glu Leu Gln Lys Leu  
145 150 155 160  
Pro Glu Leu Val His Ala Thr Leu Ser Thr Pro Asn Pro Asp Asn Gln  
165 170 175  
Val Thr Ile Lys Val Val Glu Asp Pro Gln Ala Glu Val Ser Ile Asp  
180 185 190  
Leu Leu Ala Glu Pro Ser Asn Pro Pro Pro Gln Asp Thr Leu Ser Trp  
195 200 205

Leu Pro Ala Leu Trp Ser Phe Leu Trp Gly Asp Tyr Lys Gly Glu Glu  
 210 215 220

Lys Asp Arg Ala Pro Gly Glu Lys Gly Glu Glu Lys Glu Glu Asp Glu  
 225 230 235 240

Asp Tyr Pro Ser Glu Asp Ile Glu Gly Glu Asp Gln Glu Asp Lys Glu  
 245 250 255

Glu Asp Glu Glu Glu Gln Ala Leu Trp Phe Asn Gly Thr Thr Asp Asn  
 260 265 270

Trp Asp Gln Gly Trp Leu Ala Pro Gly Asp Trp Val Phe Lys Asp Ser  
 275 280 285

Val Ser Tyr Asp Tyr Glu Pro Gln Lys Glu Trp Ser Pro Trp Ser Pro  
 290 295 300

Cys Ser Gly Asn Cys Ser Thr Gly Lys Gln Gln Arg Thr Arg Pro Cys  
 305 310 315 320

Gly Tyr Gly Cys Thr Ala Thr Glu Thr Arg Thr Cys Asp Leu Pro Ser  
 325 330 335

Cys Pro Gly Thr Glu Asp Lys Asp Thr Leu Gly Leu Pro Ser Glu Glu  
 340 345 350

Trp Lys Leu Leu Ala Arg Asn Ala Thr Asp Met His Asp Gln Asp Val  
 355 360 365

Asp Ser Cys Glu Lys Trp Leu Asn Cys Lys Ser Asp Phe Leu Ile Lys  
 370 375 380

Tyr Leu Ser Gln Met Leu Arg Asp Leu Pro Ser Cys Pro Cys Ala Tyr  
 385 390 395 400

Pro Leu Glu Ala Met Asp Ser Pro Val Ser Leu Gln Asp Glu His Gln  
 405 410 415

Gly Arg Ser Phe Arg Trp Arg Asp Ala Ser Gly Pro Arg Glu Arg Leu  
 420 425 430

Asp Ile Tyr Gln Pro Thr Ala Arg Phe Cys Leu Arg Ser Met Leu Ser  
 435 440 445

Gly Glu Ser Ser Thr Leu Ala Ala Gln His Cys Cys Tyr Asp Glu Asp  
 450 455 460

Ser Arg Leu Leu Thr Arg Gly Lys Gly Ala Gly Met Pro Asn Leu Ile  
465 470 475 480

Ser Thr Asp Phe Ser Pro Lys Leu His Phe Lys Phe Asp Thr Thr Pro  
485 490 495

Trp Ile Leu Cys Lys Gly Asp Trp Ser Arg Leu His Ala Val Leu Pro  
500 505 510

Pro Asn Asn Gly Arg Ala Cys Thr Asp Asn Pro Leu Glu Glu Glu Tyr  
515 520 525

Leu Ala Gln Leu Gln Glu Ala Lys Glu Tyr  
530 535

<210> 404

<211> 151

<212> PRT

<213> Homo sapiens

<400> 404

Lys Val Met Asn Asp Leu Pro Ser Cys Pro Cys Ser Tyr Pro Thr Glu  
1 5 10 15

Val Ala Tyr Ser Thr Ala Asp Ile Phe Asp Arg Ile Lys Arg Lys Asp  
20 25 30

Phe Arg Trp Lys Asp Ala Ser Gly Pro Lys Glu Lys Leu Glu Ile Tyr  
35 40 45

Lys Pro Thr Ala Arg Tyr Cys Ile Arg Ser Met Leu Ser Leu Glu Ser  
50 55 60

Thr Thr Leu Ala Ala Gln His Cys Cys Tyr Gly Asp Asn Met Gln Leu  
65 70 75 80

Ile Thr Arg Gly Lys Gly Ala Gly Thr Pro Asn Leu Ile Ser Thr Glu  
85 90 95

Phe Ser Ala Glu Leu His Tyr Lys Val Asp Val Leu Pro Trp Ile Ile  
100 105 110

Cys Lys Gly Asp Trp Ser Arg Tyr Asn Glu Ala Arg Pro Pro Asn Asn  
115 120 125

Gly Gln Lys Cys Thr Glu Ser Pro Ser Asp Glu Asp Tyr Ile Lys Gln

130                      135                      140  
 Phe Gln Glu Ala Arg Glu Tyr  
 145                      150  
  
 <210> 405  
 <211> 56  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 405  
 Val Gly Ser Asp Thr Thr Ser Glu Thr Ser Phe Ser Leu Ser Lys Glu  
   1                      5                      10                      15  
 Ala Pro Arg Glu His Leu Asp His Gln Ala Ala His Gln Pro Phe Pro  
                     20                      25                      30  
 Arg Pro Arg Phe Arg Gln Glu Thr Gly His Pro Ser Leu Gln Arg Asp  
                     35                      40                      45  
 Phe Pro Arg Ser Phe Leu Leu Asp  
   50                      55  
  
 <210> 406  
 <211> 42  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 406  
 Gly Asp Trp Ser Leu Trp Ser Val Cys Ser Val Thr Cys Gly Asn Gly  
   1                      5                      10                      15  
 Asn Gln Lys Arg Thr Arg Ser Cys Gly Tyr Ala Cys Thr Ala Thr Glu  
                     20                      25                      30  
 Ser Arg Thr Cys Asp Arg Pro Asn Cys Pro  
                     35                      40  
  
 <210> 407  
 <211> 50  
 <212> PRT  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: Thrombospondin

type 1 domain sequence

<400> 407

Gly Glu Trp Ser Glu Trp Ser Pro Cys Ser Val Thr Cys Gly Gly Gly  
1 5 10 15

Val Gln Thr Arg Thr Arg Cys Cys Asn Pro Pro Pro Asn Gly Gly Gly  
20 25 30

Pro Cys Thr Gly Pro Asp Thr Glu Thr Arg Ala Cys Asn Glu Gln Pro  
35 40 45

Cys Pro  
50

<210> 408

<211> 41

<212> PRT

<213> Homo sapiens

<400> 408

Gly Asp Trp Ser Leu Trp Ser Val Cys Ser Val Thr Cys Gly Asn Gly  
1 5 10 15

Asn Gln Lys Arg Thr Arg Ser Cys Gly Tyr Ala Cys Thr Ala Thr Glu  
20 25 30

Ser Arg Thr Cys Asp Arg Pro Asn Cys  
35 40

<210> 409

<211> 48

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Thrombospondin  
type 1 domain sequence

<400> 409

Ser Pro Trp Ser Glu Trp Ser Pro Cys Ser Val Thr Cys Gly Lys Gly  
1 5 10 15

Ile Arg Thr Arg Gln Arg Thr Cys Asn Ser Pro Ala Gly Gly Lys Pro  
20 25 30

Cys Thr Gly Asp Ala Gln Glu Thr Glu Ala Cys Met Met Asp Pro Cys  
 35 40 45

<210> 410  
 <211> 460  
 <212> PRT  
 <213> Homo sapiens

<400> 410

Met Ala Gly Tyr Leu Ser Glu Ser Asp Phe Val Met Val Glu Glu Gly  
 1 5 10 15

Phe Ser Thr Arg Asp Leu Leu Lys Glu Leu Thr Leu Gly Ala Ser Gln  
 20 25 30

Ala Thr Thr Asp Glu Val Ala Ala Phe Phe Val Ala Asp Leu Gly Ala  
 35 40 45

Ile Val Arg Lys His Phe Cys Phe Leu Lys Cys Leu Pro Arg Val Arg  
 50 55 60

Pro Phe Tyr Ala Val Lys Cys Asn Ser Ser Pro Gly Val Leu Lys Val  
 65 70 75 80

Leu Ala Gln Leu Gly Leu Gly Phe Ser Cys Ala Asn Lys Ala Glu Met  
 85 90 95

Glu Leu Val Gln His Ile Gly Ile Pro Ala Ser Lys Ile Ile Cys Ala  
 100 105 110

Asn Pro Cys Lys Gln Ile Ala Gln Ile Lys Tyr Ala Ala Lys His Gly  
 115 120 125

Ile Gln Leu Leu Ser Phe Asp Asn Glu Met Glu Leu Ala Lys Val Val  
 130 135 140

Lys Ser His Pro Ser Ala Lys Met Val Leu Cys Ile Ala Thr Asp Asp  
 145 150 155 160

Ser His Ser Leu Ser Cys Leu Ser Leu Lys Phe Gly Val Ser Leu Lys  
 165 170 175

Ser Cys Arg His Leu Leu Glu Asn Ala Lys Lys His His Val Glu Val  
 180 185 190



Val Gly Val Ser Phe His Ile Gly Ser Gly Cys Pro Asp Pro Gln Ala  
 195 200 205  
 Tyr Ala Gln Ser Ile Ala Asp Ala Arg Leu Val Phe Glu Met Gly Thr  
 210 215 220  
 Glu Leu Gly His Lys Met His Val Leu Asp Leu Gly Gly Gly Phe Pro  
 225 230 235 240  
 Gly Thr Glu Gly Ala Lys Val Arg Phe Glu Glu Ile Ala Ser Val Ile  
 245 250 255  
 Asn Ser Ala Leu Asp Leu Tyr Phe Pro Glu Gly Cys Gly Val Asp Ile  
 260 265 270  
 Phe Ala Glu Leu Gly Arg Tyr Tyr Val Thr Ser Ala Phe Thr Val Ala  
 275 280 285  
 Val Ser Ile Ile Ala Lys Lys Glu Val Leu Leu Asp Gln Pro Gly Arg  
 290 295 300  
 Glu Glu Glu Asn Gly Ser Thr Ser Lys Thr Ile Val Tyr His Leu Asp  
 305 310 315 320  
 Glu Gly Val Tyr Gly Ile Phe Asn Ser Val Leu Phe Asp Asn Ile Cys  
 325 330 335  
 Pro Thr Pro Ile Leu Gln Lys Lys Pro Ser Thr Glu Gln Pro Leu Tyr  
 340 345 350  
 Ser Ser Ser Leu Trp Gly Pro Ala Val Asp Gly Cys Asp Cys Val Ala  
 355 360 365  
 Glu Gly Leu Trp Leu Pro Gln Leu His Val Gly Asp Trp Leu Val Phe  
 370 375 380  
 Asp Asn Met Gly Ala Tyr Thr Val Gly Met Gly Ser Pro Phe Trp Gly  
 385 390 395 400  
 Thr Gln Ala Cys His Ile Thr Tyr Ala Met Ser Arg Val Ala Trp Glu  
 405 410 415  
 Ala Leu Arg Arg Gln Leu Met Ala Ala Glu Gln Glu Asp Asp Val Glu  
 420 425 430  
 Gly Val Cys Lys Pro Leu Ser Cys Gly Trp Glu Ile Thr Asp Thr Leu  
 435 440 445

Cys Val Gly Pro Val Phe Thr Pro Ala Ser Ile Met  
 450 455 460

<210> 411  
 <211> 480  
 <212> PRT  
 <213> Homo sapiens

<400> 411  
 Met Ala Gly Tyr Leu Ser Glu Ser Asp Phe Val Met Val Glu Glu Gly  
 1 5 10 15  
 Phe Ser Thr Arg Asp Leu Leu Lys Glu Leu Thr Leu Gly Ala Ser Gln  
 20 25 30  
 Ala Thr Thr Asp Glu Val Ala Ala Phe Phe Val Ala Asp Leu Gly Ala  
 35 40 45  
 Ile Val Arg Lys His Phe Cys Phe Leu Lys Cys Leu Pro Arg Val Arg  
 50 55 60  
 Pro Phe Tyr Ala Val Lys Cys Asn Ser Ser Pro Gly Val Leu Lys Val  
 65 70 75 80  
 Leu Ala Gln Leu Gly Leu Gly Phe Ser Cys Ala Asn Lys Ala Glu Met  
 85 90 95  
 Glu Leu Val Gln His Ile Gly Ile Pro Ala Ser Lys Ile Ile Cys Ala  
 100 105 110  
 Asn Pro Cys Lys Gln Ile Ala Gln Ile Lys Tyr Ala Ala Lys His Gly  
 115 120 125  
 Ile Gln Leu Leu Ser Phe Asp Asn Glu Met Glu Leu Ala Lys Val Val  
 130 135 140  
 Lys Ser His Pro Ser Ala Lys Met Val Leu Cys Ile Ala Thr Asp Asp  
 145 150 155 160  
 Ser His Ser Leu Ser Cys Leu Ser Leu Lys Phe Gly Val Ser Leu Lys  
 165 170 175  
 Ser Cys Arg His Leu Leu Glu Asn Ala Lys Lys His His Val Glu Val  
 180 185 190  
 Val Gly Val Ser Phe His Ile Gly Ser Gly Cys Pro Asp Pro Gln Ala

195	200	205
Tyr Ala Gln Ser Ile Ala Asp Ala Arg Leu Val Phe Glu Met Gly Thr		
210	215	220
Glu Leu Gly His Lys Met His Val Leu Asp Leu Gly Gly Gly Phe Pro		
225	230	235 240
Gly Thr Glu Gly Ala Lys Val Arg Phe Glu Glu Ile Ala Ser Val Ile		
	245	250 255
Asn Ser Ala Leu Asp Leu Tyr Phe Pro Glu Gly Cys Gly Val Asp Ile		
	260	265 270
Phe Ala Glu Leu Gly Arg Tyr Tyr Val Thr Ser Ala Phe Thr Val Ala		
	275	280 285
Val Ser Ile Ile Ala Lys Lys Glu Val Leu Leu Asp Gln Pro Gly Arg		
	290	295 300
Glu Ala Pro Leu Pro Pro Pro His Ile Ala Thr Cys Ala Ala Ser Glu		
305	310	315 320
Pro Ser Pro Pro Ala Glu Glu Asn Gly Ser Thr Ser Lys Thr Ile Val		
	325	330 335
Tyr His Leu Asp Glu Gly Val Tyr Gly Ile Phe Asn Ser Val Leu Phe		
	340	345 350
Asp Asn Ile Cys Pro Thr Pro Ile Leu Gln Lys Lys Pro Ser Thr Glu		
	355	360 365
Gln Pro Leu Tyr Ser Ser Ser Leu Trp Gly Pro Ala Val Asp Gly Cys		
	370	375 380
Asp Cys Val Ala Glu Gly Leu Trp Leu Pro Gln Leu His Val Gly Asp		
385	390	395 400
Trp Leu Val Phe Asp Asn Met Gly Ala Tyr Thr Val Gly Met Gly Ser		
	405	410 415
Pro Phe Trp Gly Thr Gln Ala Cys His Ile Thr Tyr Ala Met Ser Arg		
	420	425 430
Val Ala Trp Glu Ala Leu Arg Arg Gln Leu Met Ala Ala Glu Gln Glu		
	435	440 445
Asp Asp Val Glu Gly Val Cys Lys Pro Leu Ser Cys Gly Trp Glu Ile		

450

455

460

Thr Asp Thr Leu Cys Val Gly Pro Val Phe Thr Pro Ala Ser Ile Met  
 465 470 475 480

&lt;210&gt; 412

&lt;211&gt; 365

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 412

Met Glu Leu Val Gln His Ile Gly Ile Pro Ala Ser Lys Ile Ile Cys  
 1 5 10 15

Ala Asn Pro Cys Lys Gln Ile Ala Gln Ile Lys Tyr Ala Ala Lys His  
 20 25 30

Gly Ile Gln Leu Leu Ser Phe Asp Asn Glu Met Glu Leu Ala Lys Val  
 35 40 45

Val Lys Ser His Pro Ser Ala Lys Met Val Leu Cys Ile Ala Thr Asp  
 50 55 60

Asp Ser His Ser Leu Ser Cys Leu Ser Leu Lys Phe Gly Val Ser Leu  
 65 70 75 80

Lys Ser Cys Arg His Leu Leu Glu Asn Ala Lys Lys His His Val Glu  
 85 90 95

Val Val Gly Val Ser Phe His Ile Gly Ser Gly Cys Pro Asp Pro Gln  
 100 105 110

Ala Tyr Ala Gln Ser Ile Ala Asp Ala Arg Leu Val Phe Glu Met Gly  
 115 120 125

Thr Glu Leu Gly His Lys Met His Val Leu Asp Leu Gly Gly Gly Phe  
 130 135 140

Pro Gly Thr Glu Gly Ala Lys Val Arg Phe Glu Glu Ile Ala Ser Val  
 145 150 155 160

Ile Asn Ser Ala Leu Asp Leu Tyr Phe Pro Glu Gly Cys Gly Val Asp  
 165 170 175

Ile Phe Ala Glu Leu Gly Arg Tyr Tyr Val Thr Ser Ala Phe Thr Val  
 180 185 190  
 Ala Val Ser Ile Ile Ala Lys Lys Glu Val Leu Leu Asp Gln Pro Gly  
 195 200 205  
 Arg Glu Glu Glu Asn Gly Ser Thr Ser Lys Thr Ile Val Tyr His Leu  
 210 215 220  
 Asp Glu Gly Val Tyr Gly Ile Phe Asn Ser Val Leu Phe Asp Asn Ile  
 225 230 235 240  
 Cys Pro Thr Pro Ile Leu Gln Lys Lys Pro Ser Thr Glu Gln Pro Leu  
 245 250 255  
 Tyr Ser Ser Ser Leu Trp Gly Pro Ala Val Asp Gly Cys Asp Cys Val  
 260 265 270  
 Ala Glu Gly Leu Trp Leu Pro Gln Leu His Val Gly Asp Trp Leu Val  
 275 280 285  
 Phe Asp Asn Met Gly Ala Tyr Thr Val Gly Met Gly Ser Pro Phe Trp  
 290 295 300  
 Gly Thr Gln Ala Cys His Ile Thr Tyr Ala Met Ser Arg Val Ala Trp  
 305 310 315 320  
 Glu Ala Leu Arg Arg Gln Leu Met Ala Ala Glu Gln Glu Asp Asp Val  
 325 330 335  
 Glu Gly Val Cys Lys Pro Leu Ser Cys Gly Trp Glu Ile Thr Asp Thr  
 340 345 350  
 Leu Cys Val Gly Pro Val Phe Thr Pro Ala Ser Ile Met  
 355 360 365

<210> 413  
 <211> 362  
 <212> PRT  
 <213> Homo sapiens

<400> 413  
 Met Ala Gly Tyr Leu Ser Glu Ser Asp Phe Val Met Val Glu Glu Gly  
 1 5 10 15  
 Phe Ser Thr Arg Asp Leu Leu Lys Glu Leu Thr Leu Gly Ala Ser Gln  
 20 25 30

Ala Thr Thr Asp Glu Val Ala Ala Phe Phe Val Ala Asp Leu Gly Ala  
 35 40 45  
 Ile Val Arg Lys His Phe Cys Phe Leu Lys Cys Leu Pro Arg Val Arg  
 50 55 60  
 Pro Phe Tyr Ala Val Lys Cys Asn Ser Ser Pro Gly Val Leu Lys Val  
 65 70 75 80  
 Leu Ala Gln Leu Gly Leu Gly Phe Ser Cys Ala Asn Lys Ala Glu Met  
 85 90 95  
 Glu Leu Val Gln His Ile Gly Ile Pro Ala Ser Lys Ile Ile Cys Ala  
 100 105 110  
 Asn Pro Cys Lys Gln Ile Ala Gln Ile Lys Tyr Ala Ala Lys His Gly  
 115 120 125  
 Ile Gln Leu Leu Ser Phe Asp Asn Glu Met Glu Leu Ala Lys Val Val  
 130 135 140  
 Lys Ser His Pro Ser Ala Lys Met Val Leu Cys Ile Ala Thr Asp Asp  
 145 150 155 160  
 Ser His Ser Leu Ser Cys Leu Ser Leu Lys Phe Gly Val Ser Leu Lys  
 165 170 175  
 Ser Cys Arg His Leu Leu Glu Asn Ala Lys Lys His His Val Glu Val  
 180 185 190  
 Val Gly Val Ser Phe His Ile Gly Ser Gly Cys Pro Asp Pro Gln Ala  
 195 200 205  
 Tyr Ala Gln Ser Ile Ala Asp Ala Arg Leu Val Phe Glu Met Gly Thr  
 210 215 220  
 Glu Leu Gly His Lys Met His Val Leu Asp Leu Gly Gly Gly Phe Pro  
 225 230 235 240  
 Gly Thr Glu Gly Ala Lys Val Arg Phe Glu Glu Ile Ala Ser Val Ile  
 245 250 255  
 Asn Ser Ala Leu Asp Leu Tyr Phe Pro Glu Gly Cys Gly Val Asp Ile  
 260 265 270  
 Phe Ala Glu Leu Gly Arg Tyr Tyr Val Thr Ser Ala Phe Thr Val Ala  
 275 280 285

Val Ser Ile Ile Ala Lys Lys Glu Val Leu Leu Asp Gln Pro Gly Arg  
290 295 300

Glu Glu Glu Asn Gly Ser Thr Ser Lys Thr Ile Val Tyr His Leu Asp  
305 310 315 320

Glu Gly Val Tyr Gly Ile Phe Asn Ser Val Leu Phe Asp Asn Ile Cys  
325 330 335

Pro Thr Pro Ile Leu Gln Lys Ser Lys Asn His Ser Pro Cys Tyr Met  
340 345 350

Ser Leu Glu Ser Ile His Phe Ile Ala Val  
355 360

<210> 414

<211> 374

<212> PRT

<213> Homo sapiens

<400> 414

Met Ala Gly Tyr Leu Ser Glu Ser Asp Phe Val Met Val Glu Glu Gly  
1 5 10 15

Phe Ser Thr Arg Asp Leu Leu Lys Glu Leu Thr Leu Gly Ala Ser Gln  
20 25 30

Ala Thr Thr Asp Glu Val Ala Ala Phe Phe Val Ala Asp Leu Gly Ala  
35 40 45

Ile Val Arg Lys His Phe Cys Phe Leu Lys Cys Leu Pro Arg Val Arg  
50 55 60

Pro Phe Tyr Ala Val Lys Cys Asn Ser Ser Pro Gly Val Leu Lys Val  
65 70 75 80

Leu Ala Gln Leu Gly Leu Gly Phe Ser Cys Ala Asn Lys Ala Glu Met  
85 90 95

Glu Leu Val Gln His Ile Gly Ile Pro Ala Ser Lys Ile Ile Cys Ala  
100 105 110

Asn Pro Cys Lys Gln Ile Ala Gln Ile Lys Tyr Ala Ala Lys His Gly  
115 120 125

Ile Gln Leu Leu Ser Phe Asp Asn Glu Met Glu Leu Ala Lys Val Val

130  
 Lys Ser His Pro Ser Ala Lys Phe Val Gln Gln Arg Gly Thr Ala Cys  
 145 150 155 160  
 Leu Ile Arg Met Val Leu Cys Ile Ala Thr Asp Asp Ser His Ser Leu  
 165 170 175  
 Ser Cys Leu Ser Leu Lys Phe Gly Val Ser Leu Lys Ser Cys Arg His  
 180 185 190  
 Leu Leu Glu Asn Ala Lys Lys His His Val Glu Val Val Gly Val Ser  
 195 200 205  
 Phe His Ile Gly Ser Gly Cys Pro Asp Pro Gln Ala Tyr Ala Gln Ser  
 210 215 220  
 Ile Ala Asp Ala Arg Leu Val Phe Glu Met Gly Thr Glu Leu Gly His  
 225 230 235 240  
 Lys Met His Val Leu Asp Leu Gly Gly Gly Phe Pro Gly Thr Glu Gly  
 245 250 255  
 Ala Lys Val Arg Phe Glu Glu Ile Ala Ser Val Ile Asn Ser Ala Leu  
 260 265 270  
 Asp Leu Tyr Phe Pro Glu Gly Cys Gly Val Asp Ile Phe Ala Glu Leu  
 275 280 285  
 Gly Arg Tyr Tyr Val Thr Ser Ala Phe Thr Val Ala Val Ser Ile Ile  
 290 295 300  
 Ala Lys Lys Glu Val Leu Leu Asp Gln Pro Gly Arg Glu Glu Glu Asn  
 305 310 315 320  
 Gly Ser Thr Ser Lys Thr Ile Val Tyr His Leu Asp Glu Gly Val Tyr  
 325 330 335  
 Gly Ile Phe Asn Ser Val Leu Phe Asp Asn Ile Cys Pro Thr Pro Ile  
 340 345 350  
 Leu Gln Lys Ser Lys Asn His Ser Pro Cys Tyr Met Ser Leu Glu Ser  
 355 360 365  
 Ile His Phe Ile Ala Val  
 370



<210> 415  
 <211> 237  
 <212> PRT  
 <213> Homo sapiens

<400> 415

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Asp Leu Gly Ala Ile Val Arg Lys His Phe Cys Phe Leu Lys Cys Leu
 1              5              10              15

Pro Arg Val Arg Pro Phe Tyr Ala Val Lys Cys Asn Ser Ser Pro Gly
      20              25              30

Val Leu Lys Val Leu Ala Gln Leu Gly Leu Gly Phe Ser Cys Ala Asn
 35              40              45

Lys Ala Glu Met Glu Leu Val Gln His Ile Gly Ile Pro Ala Ser Lys
 50              55              60

Ile Ile Cys Ala Asn Pro Cys Lys Gln Ile Ala Gln Ile Lys Tyr Ala
 65              70              75              80

Ala Lys His Gly Ile Gln Leu Leu Ser Phe Asp Asn Glu Met Glu Leu
      85              90              95

Ala Lys Val Val Lys Ser His Pro Ser Ala Lys Met Val Leu Cys Ile
      100             105             110

Ala Thr Asp Asp Ser His Ser Leu Ser Cys Leu Ser Leu Lys Phe Gly
      115             120             125

Val Ser Leu Lys Ser Cys Arg His Leu Leu Glu Asn Ala Lys Lys His
      130             135             140

His Val Glu Val Val Gly Val Ser Phe His Ile Gly Ser Gly Cys Pro
      145             150             155             160

Asp Pro Gln Ala Tyr Ala Gln Ser Ile Ala Asp Ala Arg Leu Val Phe
      165             170             175

Glu Met Gly Thr Glu Leu Gly His Lys Met His Val Leu Asp Leu Gly
      180             185             190

Gly Gly Phe Pro Gly Thr Glu Gly Ala Lys Val Arg Phe Glu Glu Ile
      195             200             205

Ala Ser Val Ile Asn Ser Ala Leu Asp Leu Tyr Phe Pro Glu Gly Cys
      210             215             220

```

Gly Val Asp Ile Phe Ala Glu Leu Gly Arg Tyr Tyr Val  
 225 230 235

<210> 416  
 <211> 244  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:  
 Pyridoxal-dependent decarboxylase domain sequence

<400> 416  
 Asp Leu Gly Leu Ile Val Arg Arg Ile His Ala Leu Trp Gln Ala Phe  
 1 5 10 15  
 Leu Pro Arg Ile Gln Pro Phe Tyr Ala Val Lys Ala Asn Ser Asp Pro  
 20 25 30  
 Ala Val Leu Arg Leu Leu Ala Glu Leu Gly Thr Gly Phe Asp Cys Ala  
 35 40 45  
 Ser Lys Gly Glu Leu Glu Arg Val Leu Ala Ala Gly Val Pro Pro Glu  
 50 55 60  
 Arg Ile Ile Phe Ala Asn Pro Cys Lys Asp Arg Ser Glu Leu Arg Tyr  
 65 70 75 80  
 Ala Leu Glu His Gly Val Val Cys Val Thr Val Asp Asn Val Glu Glu  
 85 90 95  
 Leu Glu Lys Leu Ala Arg Leu Ala Pro Glu Ala Arg Leu Leu Leu Arg  
 100 105 110  
 Val Lys Pro Asp Val Asp Ala His Ala His Cys Tyr Leu Ser Thr Gly  
 115 120 125  
 Gln Asp Ser Lys Phe Gly Ala Asp Leu Glu Glu Ala Glu Ala Leu Leu  
 130 135 140  
 Lys Ala Ala Lys Glu Leu Gly Leu Asn Val Val Gly Val His Phe His  
 145 150 155 160  
 Val Gly Ser Gly Cys Thr Asp Ala Glu Ala Phe Val Lys Ala Ala Arg  
 165 170 175  
 Asp Ala Arg Asn Val Phe Asp Gln Gly Ala Asp Glu Leu Gly Phe Glu



<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:

Pyridoxal-dependent decarboxylase domain sequence

<400> 418

Thr Leu Val Ser Asn Val Ile Ala Lys Lys Thr Val Pro Ser Asp Asp  
1 5 10 15

Glu Asp Gly Lys Asp Asp Thr Arg Met Tyr Tyr Val Asn Asp Gly Gly  
20 25 30

Tyr Ser Ser Phe Ile Arg Pro Leu Leu Tyr His Ala His Pro His Ala  
35 40 45

Leu Leu Leu Arg Arg Ser Leu Asp Glu Glu Pro Pro Arg Lys Ser Ser  
50 55 60

Ile Trp Gly Pro Thr Cys Asp Ser Leu Asp Lys Ile Ile Lys Asp Arg  
65 70 75 80

Leu Leu Pro Glu Leu Asp Val Gly Asp Trp Leu Ala Phe Phe Asp Thr  
85 90 95

Gly Ala Tyr Thr Glu Ala Met Ala Ser Asn Phe  
100 105

<210> 419

<211> 467

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:

Pyridoxal-dependent decarboxylase domain sequence

<400> 419

Phe Tyr Val Tyr Asp Leu Gly Leu His Ile Val Arg Arg Ile His Ala  
1 5 10 15

Leu Trp Lys Ala Phe Leu Pro Arg Gly Gln Tyr Asn Ser Val Val Lys  
20 25 30

Pro Phe Tyr Ala Val Lys Ala Asn Ser Asp Pro Ala Val Leu Arg Leu  
35 40 45

Leu Ala Glu Leu Gly Thr His Ser Leu Gly Phe Asp Cys Ala Ser Lys  
 50 55 60  
 Gly Glu Leu Glu Arg Val Leu Ala Ala Tyr Leu Ala Gly Val Ser Pro  
 65 70 75 80  
 Glu Arg Ile Ile Phe Ala Asn Pro Cys Lys Ser Arg Ser Glu Leu Arg  
 85 90 95  
 Tyr Ala Leu Glu His Arg Lys Met Gly Gly Val Val Cys Val Thr Val  
 100 105 110  
 Asp Asn Val Glu Glu Leu Glu Lys Ile Ala Lys Leu Ala Pro Glu Ala  
 115 120 125  
 Gly Val Lys Pro Arg Leu Leu Leu Arg Val Lys Pro Asp Val Asp Ala  
 130 135 140  
 His Ala His Cys Arg Leu Ser Thr Gly Gln Glu Asp Ser Lys Phe Gly  
 145 150 155 160  
 Ala Asp Leu Glu Asp Gly Glu Asp Ala Glu Ala Leu Leu Lys Ala Ala  
 165 170 175  
 Lys Glu Leu Gly Asn Leu Asn Val Val Gly Val His Phe His Val Gly  
 180 185 190  
 Ser Gly Ile Ser Asp Leu Glu Ala Phe Val Lys Ala Val Arg Asp Ala  
 195 200 205  
 Arg Asn Val Phe Asp Gln Gly Ala Asp Glu Leu Gly Phe Lys Thr Ile  
 210 215 220  
 Asp Leu Lys Ile Leu Asp Ile Gly Gly Gly Phe Gly Val Asp Tyr Thr  
 225 230 235 240  
 Gly Thr Arg Ser Gln Ser Asp Met Ser Val Ala Glu Asp Phe Glu Glu  
 245 250 255  
 Ile Ala Glu Val Ile Asn Ala Ala Leu Glu Glu Leu Phe Pro His Ala  
 260 265 270  
 Gly Tyr Gly Asp Pro Gly Pro Thr Ile Ile Ala Glu Pro Gly Arg Tyr  
 275 280 285  
 Ile Val Ala Ala Ala Gly Thr Leu Val Ser Asn Val Ile Ala Lys Lys  
 290 295 300

Glu Val Pro Ser Asp Asp Ala Asp Thr Thr Ser Asp Ser Leu Arg Glu  
305 310 315 320

Glu Ser Lys Asp Asp Thr Arg Met Tyr Tyr Val Asn Asp Gly Gly Tyr  
325 330 335

Gly Ser Phe Ile Arg Pro Leu Leu Tyr His Ala His Pro Glu Ala Leu  
340 345 350

Leu Leu Arg Arg Gly Gly Glu Val Gln Tyr Gln Asp Ala Glu Thr Glu  
355 360 365

Arg Ala Ala Asp Lys Ser Leu Ser Asn Phe Ser Leu Phe Gln Ser Tyr  
370 375 380

Pro Asp Ala Trp Gly Ile Asp Gln Leu Phe Pro Val Leu Pro Leu Arg  
385 390 395 400

Ser Leu Asp Glu Glu Pro Lys Arg Lys Ser Ser Ile Val Gly Pro Thr  
405 410 415

Cys Asp Ser Asp Gly Lys Leu Asp Lys Ile Ile Lys Asp Asp Gly Ile  
420 425 430

Ala Glu Asp Arg Leu Leu Pro Glu Leu Lys Pro Val Gly Asp Trp Leu  
435 440 445

Ala Phe Pro Asp Thr Gly Ala Tyr Thr Tyr Ala Met Ala Ser Asn Tyr  
450 455 460

Asn Gly Phe  
465

<210> 420

<211> 361

<212> PRT

<213> Homo sapiens

<400> 420

Phe Phe Val Ala Asp Leu Gly Ala Ile Val Arg Lys His Phe Cys Phe  
1 5 10 15

Leu Lys Cys Leu Pro Arg Val Arg Pro Phe Tyr Ala Val Lys Cys Asn  
20 25 30

Ser Ser Pro Gly Val Leu Lys Val Leu Ala Gln Leu Gly Leu Gly Phe

35	40	45
Ser Cys Ala Asn Lys Ala Glu Met Glu Leu Val Gln His Ile Gly Ile		
50	55	60
Pro Ala Ser Lys Ile Ile Cys Ala Asn Pro Cys Lys Gln Ile Ala Gln		
65	70	75
Ile Lys Tyr Ala Ala Lys His Gly Ile Gln Leu Leu Ser Phe Asp Asn		
	85	90
		95
Glu Met Glu Leu Ala Lys Val Val Lys Ser His Pro Ser Ala Lys Met		
	100	105
		110
Val Leu Cys Ile Ala Thr Asp Asp Ser His Ser Leu Ser Cys Leu Ser		
	115	120
		125
Leu Lys Phe Gly Val Ser Leu Lys Ser Cys Arg His Leu Leu Glu Asn		
	130	135
		140
Ala Lys Lys His His Val Glu Val Val Gly Val Ser Phe His Ile Gly		
145	150	155
		160
Ser Gly Cys Pro Asp Pro Gln Ala Tyr Ala Gln Ser Ile Ala Asp Ala		
	165	170
		175
Arg Leu Val Phe Glu Met Gly Thr Glu Leu Gly His Lys Met His Val		
	180	185
		190
Leu Asp Leu Gly Gly Gly Phe Pro Gly Thr Glu Gly Ala Lys Val Arg		
	195	200
		205
Phe Glu Glu Ile Ala Ser Val Ile Asn Ser Ala Leu Asp Leu Tyr Phe		
	210	215
		220
Pro Glu Gly Cys Gly Val Asp Ile Phe Ala Glu Leu Gly Arg Tyr Tyr		
225	230	235
		240
Val Thr Ser Ala Phe Thr Val Ala Val Ser Ile Ile Ala Lys Lys Glu		
	245	250
		255
Val Leu Leu Asp Gln Pro Gly Arg Glu Glu Glu Asn Gly Ser Thr Ser		
	260	265
		270
Lys Thr Ile Val Tyr His Leu Asp Glu Gly Val Tyr Gly Ile Phe Asn		
	275	280
		285
Ser Val Leu Phe Asp Asn Ile Cys Pro Thr Pro Ile Leu Gln Lys Lys		

290                                      295                                      300  
 Pro Ser Thr Glu Gln Pro Leu Tyr Ser Ser Ser Leu Trp Gly Pro Ala  
 305                                      310                                      315                                      320  
 Val Asp Gly Cys Asp Cys Val Ala Glu Gly Leu Trp Leu Pro Gln Leu  
                                     325                                      330                                      335  
 His Val Gly Asp Trp Leu Val Phe Asp Asn Met Gly Ala Tyr Thr Val  
                                     340                                      345                                      350  
 Gly Met Gly Ser Pro Phe Trp Gly Thr  
                                     355                                      360  
  
 <210> 421  
 <211> 479  
 <212> PRT  
 <213> Mus musculus  
  
 <400> 421  
 Met Leu Gln Ile Thr Glu Trp Arg Phe Leu Ala Arg Asp Glu Gly Glu  
   1                                      5                                      10                                      15  
 Ser Ala Val Ala Glu Asp Pro Thr Trp Gly Glu Asp Glu Glu Pro Leu  
                                     20                                      25                                      30  
 Ala Cys Thr Thr Asp Ser Trp Ala Gln Gly Ser Val Pro Val Leu His  
                                     35                                      40                                      45  
 Thr Pro Ala Pro Val Cys Val Glu Glu Gln Phe His Asn Glu Glu Pro  
                                     50                                      55                                      60  
 Gly Asn Pro Asp Gln Phe Leu Leu Gly Ser Ser Trp Asp Lys Glu Ser  
   65                                      70                                      75                                      80  
 Gln Lys Pro Thr Gln Pro Ser Glu Pro Ser Ala Glu Pro Lys Val Thr  
                                     85                                      90                                      95  
 Pro Arg Pro Thr Ala Thr Leu Glu Ala Phe Glu Glu Ala Glu Pro Gly  
                                     100                                      105                                      110  
 Asp Ala Leu Glu Val Pro His Gly Gln Glu Gly Ser His Met Leu Ala  
                                     115                                      120                                      125  
 Val Pro Ser Lys Glu Ser Leu Arg Ser Thr Ala Glu Gly Glu Arg Val  
                                     130                                      135                                      140



Tyr	Ser	Pro	Gln	Ser	Ser	Leu	Lys	Gln	Pro	Gln	Val	Val	Arg	Leu	Gln	145	150	155	160
Ala	Ser	Glu	Lys	Glu	Ser	Ser	Phe	Gly	Ser	His	Leu	Ser	Leu	Glu	Asp	165	170	175	
Leu	Tyr	Leu	Cys	Met	Pro	Gln	Pro	Asp	Ala	Ala	Gly	Asp	Arg	Leu	Ser	180	185	190	
Leu	Gln	Ser	Lys	Gly	Gln	Leu	His	Ser	Ser	Pro	Ile	Gly	Ser	Glu	Ser	195	200	205	
His	Leu	Gly	Ala	Leu	Thr	Pro	Ala	Glu	Pro	Ser	Ala	Phe	Gln	Glu	Pro	210	215	220	
Glu	Val	Leu	Gly	Glu	Arg	Pro	Lys	His	Lys	Thr	Thr	Thr	Leu	Arg	Met	225	230	235	240
Asp	Ser	Ser	Arg	Leu	Pro	Arg	His	Trp	Val	Arg	Pro	Val	Ala	Glu	Val	245	250	255	
Leu	Ile	Pro	Asp	Leu	Glu	Val	His	Pro	Leu	Glu	Ile	Tyr	Arg	Gly	Arg	260	265	270	
Pro	Arg	Arg	Ser	Gln	Ala	Gly	Thr	Ala	Thr	Ser	Ala	Cys	Glu	Ser	Gln	275	280	285	
Ala	Leu	Ser	Ser	Arg	Ala	Pro	Ser	Lys	Pro	His	Val	Ser	Ser	Pro	Arg	290	295	300	
Phe	Pro	Leu	Gln	Arg	Cys	Ala	Thr	Phe	Arg	Ala	Leu	Gly	Pro	Asp	Pro	305	310	315	320
Ser	Leu	Asn	Leu	Ala	Gln	Thr	Ser	Pro	Ser	Phe	Gly	Ser	Asn	Val	Pro	325	330	335	
Phe	Leu	Ser	Pro	Gly	Phe	Arg	Phe	Leu	Pro	Arg	Asn	Pro	Ile	Pro	Pro	340	345	350	
Asp	Val	Ala	Ser	Thr	Pro	Thr	Pro	Lys	Leu	Trp	Pro	Leu	Ala	Lys	Trp	355	360	365	
Pro	Ser	Gly	Trp	Glu	Arg	Glu	Ala	Glu	Gln	Leu	Gly	Glu	Leu	Trp	Ala	370	375	380	
Gly	Arg	Thr	Arg	Val	Pro	Pro	Gln	Gly	Gln	Glu	Pro	Val	Glu	Val	Thr	385	390	395	400

Pro Leu Glu Glu Asp Ser Gly Trp Pro Leu Ala Ala Pro Gln Val Leu  
 405 410 415  
 Glu Ala Thr Ser Gln Val Leu Trp Lys Pro Met Val Ile Ser Glu Thr  
 420 425 430  
 Met Lys Leu Val Pro Gly Val Ser Met Trp Asn Arg Gly Thr Gln Glu  
 435 440 445  
 Leu Leu Asn Pro Ala Val Ile Arg Lys Glu Ala Glu Glu Gly Thr Pro  
 450 455 460  
 Gln Ala Pro Glu Gln Gln Pro Ile Gln Thr Gly Val Ser Lys Pro  
 465 470 475  
  
 <210> 422  
 <211> 300  
 <212> PRT  
 <213> Mus musculus  
  
 <400> 422  
 Met Gly Leu Val Leu Arg Lys Met Leu Ser Ser Gly Val Cys Thr Ser  
 1 5 10 15  
 Asn Val Gln Leu Pro Gly Lys Val Ala Ile Val Thr Gly Ala Asn Thr  
 20 25 30  
 Gly Ile Gly Lys Glu Thr Ala Lys Asp Leu Ala Gln Arg Gly Ala Arg  
 35 40 45  
 Val Tyr Leu Ala Cys Arg Asp Val Asp Lys Gly Glu Leu Ala Ala Arg  
 50 55 60  
 Glu Ile Gln Ala Val Thr Gly Asn Ser Gln Val Phe Val Arg Lys Leu  
 65 70 75 80  
 Asp Leu Ala Asp Thr Lys Ser Ile Arg Ala Phe Ala Lys Asp Phe Leu  
 85 90 95  
 Ala Glu Glu Lys His Leu His Leu Leu Ile Asn Asn Ala Gly Val Met  
 100 105 110  
 Met Cys Pro Tyr Ser Lys Thr Ala Asp Gly Phe Glu Met His Ile Gly  
 115 120 125  
 Val Asn His Leu Gly His Phe Leu Leu Thr His Leu Leu Leu Glu Lys  
 130 135 140

Leu Lys Glu Ser Ala Pro Ser Arg Ile Val Asn Leu Ser Ser Leu Gly  
 145 150 155 160  
 His His Leu Gly Arg Ile His Phe His Asn Leu Gln Gly Glu Lys Phe  
 165 170 175  
 Tyr Ser Ala Gly Leu Ala Tyr Cys His Ser Lys Leu Ala Asn Ile Leu  
 180 185 190  
 Phe Thr Lys Glu Leu Ala Lys Arg Leu Lys Gly Ser Gly Val Thr Thr  
 195 200 205  
 Tyr Ser Val His Pro Gly Thr Val His Ser Glu Leu Thr Arg Tyr Ser  
 210 215 220  
 Ser Ile Met Arg Trp Leu Trp Gln Leu Phe Phe Val Phe Ile Lys Thr  
 225 230 235 240  
 Pro Gln Glu Gly Ala Gln Thr Ser Leu Tyr Cys Ala Leu Thr Glu Gly  
 245 250 255  
 Leu Glu Ser Leu Ser Gly Ser His Phe Ser Asp Cys Gln Leu Ala Trp  
 260 265 270  
 Val Ser Tyr Gln Gly Arg Asn Glu Ile Ile Ala Arg Arg Leu Trp Asp  
 275 280 285  
 Val Ser Cys Asp Leu Leu Gly Leu Pro Val Asp Trp  
 290 295 300  
  
 <210> 423  
 <211> 293  
 <212> PRT  
 <213> Mus musculus  
  
 <400> 423  
 Met Leu Ser Ser Gly Val Cys Thr Ser Asn Val Gln Leu Pro Gly Lys  
 1 5 10 15  
 Val Ala Ile Val Thr Gly Ala Asn Thr Gly Ile Gly Lys Glu Thr Ala  
 20 25 30  
 Lys Asp Leu Ala Gln Arg Gly Ala Arg Val Tyr Leu Ala Cys Arg Asp  
 35 40 45  
 Val Asp Lys Gly Glu Leu Ala Ala Arg Glu Ile Gln Ala Val Thr Gly

50	55	60
Asn Ser Gln Val Phe Val Arg Lys Leu Asp Leu Ala Asp Thr Lys Ser		
65	70	75 80
Ile Arg Ala Phe Ala Lys Asp Phe Leu Ala Glu Glu Lys His Leu His		
	85	90 95
Leu Leu Ile Asn Asn Ala Gly Val Met Met Cys Pro Tyr Ser Lys Thr		
	100	105 110
Ala Asp Gly Phe Glu Met His Ile Gly Val Asn His Leu Gly His Phe		
	115	120 125
Leu Leu Thr His Leu Leu Leu Glu Lys Leu Lys Glu Ser Ala Pro Ser		
	130	135 140
Arg Ile Val Asn Leu Ser Ser Leu Gly His His Leu Gly Arg Ile His		
	145	150 155 160
Phe His Asn Leu Gln Gly Glu Lys Phe Tyr Ser Ala Gly Leu Ala Tyr		
	165	170 175
Cys His Ser Lys Leu Ala Asn Ile Leu Phe Thr Lys Glu Leu Ala Lys		
	180	185 190
Arg Leu Lys Gly Ser Gly Val Thr Thr Tyr Ser Val His Pro Gly Thr		
	195	200 205
Val His Ser Glu Leu Thr Arg Tyr Ser Ser Ile Met Arg Trp Leu Trp		
	210	215 220
Gln Leu Phe Phe Val Phe Ile Lys Thr Pro Gln Glu Gly Ala Gln Thr		
	225	230 235 240
Ser Leu Tyr Cys Ala Leu Thr Glu Gly Leu Glu Ser Leu Ser Gly Ser		
	245	250 255
His Phe Ser Asp Cys Gln Leu Ala Trp Val Ser Tyr Gln Gly Arg Asn		
	260	265 270
Glu Ile Ile Ala Arg Arg Leu Trp Asp Val Ser Cys Asp Leu Leu Gly		
	275	280 285
Leu Pro Val Asp Trp		
290		

<210> 424  
 <211> 316  
 <212> PRT  
 <213> Mus musculus

<400> 424  
 Met Phe Gly Phe Leu Leu Leu Leu Ser Leu Pro Phe Ile Leu Tyr Leu  
   1                  5                  10                  15  
 Val Thr Pro Lys Ile Arg Lys Met Leu Ser Ser Gly Val Cys Thr Ser  
           20                  25                  30  
 Asn Val Gln Leu Pro Gly Lys Val Ala Ile Val Thr Gly Ala Asn Thr  
       35                  40                  45  
 Gly Ile Gly Lys Glu Thr Ala Lys Asp Leu Ala Gln Arg Gly Ala Arg  
   50                  55                  60  
 Val Tyr Leu Ala Cys Arg Asp Val Asp Lys Gly Glu Leu Ala Ala Arg  
   65                  70                  75                  80  
 Glu Ile Gln Ala Val Thr Gly Asn Ser Gln Val Phe Val Arg Lys Leu  
           85                  90                  95  
 Asp Leu Ala Asp Thr Lys Ser Ile Arg Ala Phe Ala Lys Asp Phe Leu  
       100                  105                  110  
 Ala Glu Glu Lys His Leu His Leu Leu Ile Asn Asn Ala Gly Val Met  
       115                  120                  125  
 Met Cys Pro Tyr Ser Lys Thr Ala Asp Gly Phe Glu Met His Ile Gly  
       130                  135                  140  
 Val Asn His Leu Gly His Phe Leu Leu Thr His Leu Leu Leu Glu Lys  
   145                  150                  155                  160  
 Leu Lys Glu Ser Ala Pro Ser Arg Ile Val Asn Leu Ser Ser Leu Gly  
           165                  170                  175  
 His His Leu Gly Arg Ile His Phe His Asn Leu Gln Gly Glu Lys Phe  
       180                  185                  190  
 Tyr Ser Ala Gly Leu Ala Tyr Cys His Ser Lys Leu Ala Asn Ile Leu  
       195                  200                  205  
 Phe Thr Lys Glu Leu Ala Lys Arg Leu Lys Gly Ser Gly Val Thr Thr  
       210                  215                  220

Tyr Ser Val His Pro Gly Thr Val His Ser Glu Leu Thr Arg Tyr Ser  
 225 230 235 240

Ser Ile Met Arg Trp Leu Trp Gln Leu Phe Phe Val Phe Ile Lys Thr  
 245 250 255

Pro Gln Glu Gly Ala Gln Thr Ser Leu Tyr Cys Ala Leu Thr Glu Gly  
 260 265 270

Leu Glu Ser Leu Ser Gly Ser His Phe Ser Asp Cys Gln Leu Ala Trp  
 275 280 285

Val Ser Tyr Gln Gly Arg Asn Glu Ile Ile Ala Arg Arg Leu Trp Asp  
 290 295 300

Val Ser Cys Asp Leu Leu Gly Leu Pro Val Asp Trp  
 305 310 315

<210> 425

<211> 353

<212> PRT

<213> Mus musculus

<400> 425

Met Phe Gly Phe Leu Leu Leu Ser Leu Pro Phe Ile Leu Tyr Leu  
 1 5 10 15

Val Thr Pro Lys Ile Arg Lys Met Leu Ser Ser Gly Val Cys Thr Ser  
 20 25 30

Asn Val Gln Leu Pro Gly Lys Val Ala Ile Val Thr Gly Ala Asn Thr  
 35 40 45

Gly Ile Gly Lys Glu Thr Ala Lys Asp Leu Ala Gln Arg Gly Ala Arg  
 50 55 60

Val Tyr Leu Ala Cys Arg Asp Val Asp Lys Gly Glu Leu Ala Ala Arg  
 65 70 75 80

Glu Ile Gln Ala Val Thr Gly Asn Ser Gln Val Phe Val Arg Lys Leu  
 85 90 95

Asp Leu Ala Asp Thr Lys Ser Ile Arg Ala Phe Ala Lys Asp Phe Leu  
 100 105 110

Ala Glu Glu Lys His Leu His Leu Leu Ile Asn Asn Ala Gly Val Met  
 115 120 125

Met Cys Pro Tyr Ser Lys Thr Ala Asp Gly Phe Glu Met His Ile Gly  
 130 135 140  
 Val Asn His Leu Gly His Phe Leu Leu Thr His Leu Leu Leu Glu Lys  
 145 150 155 160  
 Leu Lys Glu Ser Ala Pro Ser Arg Ile Val Asn Leu Ser Ser Leu Gly  
 165 170 175  
 His His Leu Gly Arg Ile His Phe His Asn Leu Gln Gly Glu Lys Phe  
 180 185 190  
 Tyr Ser Ala Gly Leu Ala Tyr Cys His Ser Lys Leu Ala Asn Ile Leu  
 195 200 205  
 Phe Thr Lys Glu Leu Ala Lys Arg Leu Lys Gly Ser Gly Val Thr Thr  
 210 215 220  
 Tyr Ser Val His Pro Gly Thr Val His Ser Glu Leu Thr Gly Tyr Ser  
 225 230 235 240  
 Ser Ile Met Arg Trp Leu Trp Gln Leu Phe Phe Val Phe Ile Lys Thr  
 245 250 255  
 Pro Gln Glu Gly Ala Gln Thr Ser Leu Tyr Cys Ala Leu Thr Glu Gly  
 260 265 270  
 Leu Glu Ser Leu Ser Gly Arg His Phe Ser Asp Cys Gln Leu Ala Trp  
 275 280 285  
 Val Ser Tyr Gln Gly Arg Asn Glu Ile Ile Ala Arg Arg Leu Trp Asp  
 290 295 300  
 Val Ser Cys Asp Leu Leu Ala Ser Gln Trp Ile Gly Lys Trp Trp Phe  
 305 310 315 320  
 Gly Pro Lys Arg Arg Leu Glu Glu Met Met Ile Ile Leu Gln Ser Gly  
 325 330 335  
 Gln Asn Leu Glu Pro Glu Glu Arg Arg Thr Ser Ser Leu Ser Cys Leu  
 340 345 350  
 Ala

<210> 426

<211> 127  
<212> PRT  
<213> Homo sapiens

<400> 426

Thr Gly Lys Ile Ala Ile Val Thr Gly Ala Asn Ser Gly Ile Gly Lys  
1 5 10 15  
Val Val Ser Gln Asp Leu Ala Arg Cys Gly Ala Gln Val Ile Leu Thr  
20 25 30  
Cys Gln Ser Arg Glu Cys Gly Gln Gln Ala Leu Ala Glu Ile Gln Ala  
35 40 45  
Ala Ser Asn Ser Asn Arg Leu Leu Leu Gly Glu Val Asp Leu Ser Ser  
50 55 60  
Met Thr Ser Ile Arg Ser Phe Ala Arg Arg Leu Leu Gln Glu Asn Pro  
65 70 75 80  
Glu Ile His Leu Leu Val Asn Asn Ala Gly Val Ser Gly Phe Arg Arg  
85 90 95  
His Leu Pro Gln Gly Ala Trp Ile Ser Pro Leu Ser Leu Thr Met Leu  
100 105 110  
Gly Pro Phe Cys Ser Gln Ile Tyr Ser Lys Asp Leu Lys Gln Gly  
115 120 125

<210> 427  
<211> 128  
<212> PRT  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: short chain  
dehydrogenase domain sequence

<400> 427

Thr Gly Lys Val Ala Leu Val Thr Gly Ala Ser Ser Gly Ile Gly Leu  
1 5 10 15  
Ala Ile Ala Lys Arg Leu Ala Glu Glu Gly Ala Lys Val Val Val Val  
20 25 30  
Asp Arg Arg Glu Glu Lys Ala Glu Ala Ala Ala Glu Leu Lys Ala Glu  
35 40 45



Leu Gly Asp Arg Ala Leu Phe Ile Gln Leu Asp Val Thr Asp Glu Glu  
50 55 60

Ser Ile Lys Ala Ala Val Ala Gln Ala Val Glu Glu Leu Gly Arg Leu  
65 70 75 80

Asp Val Leu Val Asn Asn Ala Gly Ile Leu Gly Pro Gly Glu Pro Phe  
85 90 95

Glu Leu Ser Glu Asp Asp Trp Glu Arg Val Ile Asp Val Asn Leu Thr  
100 105 110

Gly Val Phe Leu Leu Thr Gln Ala Val Leu Pro His Met Leu Lys Arg  
115 120 125

<210> 428

<211> 158

<212> PRT

<213> Homo sapiens

<400> 428

Met Glu Val Met Asp Val Phe Ser Thr Asp Asp Leu Thr Gly Phe Leu  
1 5 10 15

Gln Thr Lys Ala Gln Gln Gly Trp Leu Val Ala Gly Thr Val Gly Cys  
20 25 30

Pro Ser Thr Glu Asp Pro Gln Ser Ser Glu Ile Pro Ile Met Ser Cys  
35 40 45

Leu Glu Phe Leu Trp Glu Arg Pro Thr Leu Leu Val Leu Gly Asn Glu  
50 55 60

Gly Ser Gly Leu Ser Gln Glu Val Gln Ala Ser Cys Gln Leu Leu Leu  
65 70 75 80

Thr Ile Leu Pro Arg Arg Gln Leu Pro Pro Gly Leu Glu Ser Leu Asn  
85 90 95

Val Ser Val Ala Ala Gly Ile Leu Leu His Ser Ile Cys Ser Gln Arg  
100 105 110

Lys Gly Phe Pro Thr Glu Gly Glu Arg Arg Gln Leu Leu Gln Asp Pro

115	120	125
Gln Glu Pro Ser Ala Arg Ser Glu Gly Leu Ser Met Ala Gln His Pro		
130	135	140
Gly Leu Ser Ser Gly Pro Glu Lys Glu Arg Gln Asn Glu Gly		
145	150	155
<210> 429		
<211> 155		
<212> PRT		
<213> Homo sapiens		
<400> 429		
Met Asp Val Phe Ser Thr Asp Asp Leu Thr Gly Phe Leu Gln Thr Lys		
1	5	10
Ala Gln Gln Gly Trp Leu Val Ala Gly Thr Val Gly Cys Pro Ser Thr		
20	25	30
Glu Asp Pro Gln Ser Ser Glu Ile Pro Ile Met Ser Cys Leu Glu Phe		
35	40	45
Leu Trp Glu Arg Pro Thr Leu Leu Val Leu Gly Asn Glu Gly Ser Gly		
50	55	60
Leu Ser Gln Glu Val Gln Ala Ser Cys Gln Leu Leu Leu Thr Ile Leu		
65	70	75
Pro Arg Arg Gln Leu Pro Pro Gly Leu Glu Ser Leu Asn Val Ser Val		
85	90	95
Ala Ala Gly Ile Leu Leu His Ser Ile Cys Ser Gln Arg Lys Gly Phe		
100	105	110
Pro Thr Glu Gly Glu Arg Arg Gln Leu Leu Gln Asp Pro Gln Glu Pro		
115	120	125
Ser Ala Arg Ser Glu Gly Leu Ser Met Ala Gln His Pro Gly Leu Ser		
130	135	140
Ser Gly Pro Glu Lys Glu Arg Gln Asn Glu Gly		
145	150	155

<210> 430  
 <211> 124

<212> PRT

<213> Homo sapiens

<400> 430

Met Asp Val Phe Ala Thr Pro Asp Leu Pro Gly Phe Leu Gln Ala Lys  
1 5 10 15  
Ala Gln Gln Gly Trp Leu Val Val Gly Thr Val Gly Cys Pro Gly Pro  
20 25 30  
Glu Ile Ser Gln Ser Ser Lys Val Pro Ile Thr Ser Cys Leu Glu Phe  
35 40 45  
Val Trp Asp Arg Pro Thr Leu Leu Val Leu Gly Ser Glu Gly Ser Gly  
50 55 60  
Leu Ser Gln Glu Val Phe Ala Ser Cys Gln Leu Leu Leu Thr Ile Leu  
65 70 75 80  
Pro Arg Arg His Leu Pro Pro Gly Leu Glu Ser Leu Asn Val Ser Val  
85 90 95  
Ala Thr Gly Ile Leu Leu His Ser Ile Cys Ser Gln Lys Lys Gly Phe  
100 105 110  
Pro Val Gln Glu Arg Gly Gln Leu Leu Gln Asp Ser  
115 120

<210> 431

<211> 181

<212> PRT

<213> Homo sapiens

<400> 431

Met Phe Ser Ala Ile Arg Ser Gln His Ser Gly Val Asp Ile Cys Ile  
1 5 10 15  
Asn Asn Ala Gly Leu Ala Arg Pro Asp Thr Leu Leu Ser Gly Ser Thr  
20 25 30  
Ser Gly Trp Lys Asp Met Phe Asn Val Asn Val Leu Ala Leu Ser Ile  
35 40 45  
Cys Thr Arg Glu Ala Tyr Gln Ser Met Lys Glu Arg Asn Val Asp Asp  
50 55 60  
Gly His Ile Ile Asn Ile Asn Ser Met Ser Gly His Arg Val Leu Pro

65		70		75		80
Leu Ser Val Thr His Phe Tyr Ser Ala Thr Lys Tyr Ala Val Thr Ala						
	85		90		95	
Leu Thr Glu Gly Leu Arg Gln Glu Leu Arg Glu Ala Gln Thr His Ile						
	100		105		110	
Arg Ala Thr Cys Ile Ser Pro Gly Val Val Glu Thr Gln Phe Ala Phe						
	115		120		125	
Lys Leu His Asp Lys Asp Pro Glu Lys Ala Ala Ala Thr Tyr Glu Gln						
	130		135		140	
Met Lys Cys Leu Lys Pro Glu Asp Val Ala Glu Ala Val Ile Tyr Val						
145		150		155		160
Leu Ser Thr Pro Ala His Ile Gln Ile Gly Asp Ile Gln Met Arg Pro						
	165		170		175	
Thr Glu Gln Val Thr						
	180					

<210> 432

<211> 181

<212> PRT

<213> Mus musculus

<400> 432

Met Ser Ser Ala Ile Arg Ser Gln His Ser Gly Val Asp Ile Cys Ile														
1		5				10						15		
Asn Asn Ala Gly Leu Ala Arg Pro Asp Thr Leu Leu Ser Gly Ser Thr														
	20					25						30		
Ser Gly Trp Lys Asp Met Phe Asn Val Asn Val Leu Ala Leu Ser Ile														
	35					40						45		
Cys Thr Arg Glu Ala Tyr Gln Ser Met Lys Glu Arg Asn Val Asp Asp														
	50					55						60		
Gly His Ile Ile Asn Ile Asn Ser Met Ser Gly His Arg Val Leu Pro														
65				70				75					80	
Leu Ser Val Thr His Phe Tyr Ser Ala Thr Lys Tyr Ala Val Thr Ala														
	85							90					95	

Leu Thr Glu Gly Leu Arg Gln Glu Leu Arg Glu Ala Gln Thr His Ile  
100 105 110

Arg Ala Thr Cys Ile Ser Pro Gly Val Val Glu Thr Gln Phe Ala Phe  
115 120 125

Lys Leu His Asp Lys Asp Pro Glu Lys Ala Ala Ala Thr Tyr Glu Gln  
130 135 140

Met Lys Cys Leu Lys Pro Glu Asp Val Ala Glu Ala Val Ile Tyr Val  
145 150 155 160

Leu Ser Thr Pro Ala His Ile Gln Ile Gly Asp Ile Gln Met Arg Pro  
165 170 175

Thr Glu Gln Val Thr  
180

<210> 433

<211> 182

<212> PRT

<213> Homo sapiens

<400> 433

Asp Arg Leu Ala Leu Val Thr Gly Ala Ser Gly Gly Ile Gly Ala Ala  
1 5 10 15

Val Ala Arg Ala Leu Val Gln Gln Gly Leu Lys Val Val Gly Cys Ala  
20 25 30

Arg Thr Val Gly Asn Ile Glu Glu Leu Ala Ala Glu Cys Lys Ser Ala  
35 40 45

Gly Tyr Pro Gly Thr Leu Ile Pro Tyr Arg Cys Asp Leu Ser Asn Glu  
50 55 60

Glu Asp Ile Leu Ser Met Phe Ser Ala Ile Arg Ser Gln His Ser Gly  
65 70 75 80

Val Asp Ile Cys Ile Asn Asn Ala Gly Leu Ala Arg Pro Asp Thr Leu  
85 90 95

Leu Ser Gly Ser Thr Ser Gly Trp Lys Asp Met Phe Asn Val Asn Val  
100 105 110

Leu Ala Leu Ser Ile Cys Thr Arg Glu Ala Tyr Gln Ser Met Lys Glu  
115 120 125

Arg Asn Val Asp Asp Gly His Ile Ile Asn Ile Asn Ser Met Ser Gly  
 130 135 140

His Arg Val Leu Pro Leu Ser Val Thr His Phe Tyr Ser Ala Thr Lys  
 145 150 155 160

Tyr Ala Val Thr Ala Leu Thr Glu Gly Leu Arg Gln Glu Leu Arg Glu  
 165 170 175

Ala Gln Thr His Ile Arg  
 180

<210> 434

<211> 174

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: short chain  
 dehydrogenase domain sequence

<400> 434

Gly Lys Val Ala Leu Val Thr Gly Ala Ser Ser Gly Ile Gly Leu Ala  
 1 5 10 15

Ile Ala Lys Arg Leu Ala Glu Glu Gly Ala Lys Val Val Val Val Asp  
 20 25 30

Arg Arg Glu Glu Lys Ala Glu Ala Ala Ala Glu Leu Lys Ala Glu Leu  
 35 40 45

Gly Asp Arg Ala Leu Phe Ile Gln Leu Asp Val Thr Asp Glu Glu Ser  
 50 55 60

Ile Lys Ala Ala Val Ala Gln Ala Val Glu Glu Leu Gly Arg Leu Asp  
 65 70 75 80

Val Leu Val Asn Asn Ala Gly Ile Leu Gly Pro Gly Glu Pro Phe Glu  
 85 90 95

Leu Ser Glu Asp Asp Trp Glu Arg Val Ile Asp Val Asn Leu Thr Gly  
 100 105 110

Val Phe Leu Leu Thr Gln Ala Val Leu Pro His Met Leu Lys Arg Ser  
 115 120 125

Gly Gly Arg Ile Val Asn Ile Ser Ser Val Ala Gly Leu Val Pro Ser  
 130 135 140

Pro Gly Leu Ser Ala Tyr Ser Ala Ser Lys Ala Ala Val Val Gly Phe  
 145 150 155 160

Thr Arg Ser Leu Ala Leu Glu Leu Ala Pro His Gly Ile Arg  
 165 170

<210> 435

<211> 115

<212> PRT

<213> Homo sapiens

<400> 435

Leu Val Leu Asp Gly Ile Gln Asp Pro Arg Asn Phe Gly Ala Val Leu  
 1 5 10 15

Arg Ser Ala His Phe Leu Gly Val Asp Lys Thr Lys Ala Gln Gln Gly  
 20 25 30

Trp Leu Val Ala Gly Thr Val Gly Cys Pro Ser Thr Glu Asp Pro Gln  
 35 40 45

Ser Ser Glu Ile Pro Ile Met Ser Cys Leu Glu Phe Leu Trp Glu Arg  
 50 55 60

Pro Thr Leu Leu Val Leu Gly Asn Glu Gly Ser Gly Leu Ser Gln Glu  
 65 70 75 80

Val Gln Ala Ser Cys Gln Leu Leu Leu Thr Ile Leu Pro Arg Arg Gln  
 85 90 95

Leu Pro Pro Gly Leu Glu Ser Leu Asn Val Ser Val Ala Ala Gly Ile  
 100 105 110

Leu Leu His  
 115

<210> 436

<211> 140

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: SpoU rRNA

Methylase family domain sequence

<400> 436

Val Val Leu Asp Glu Val Glu Ile Pro His Asn Ile Gly Ala Ile Ile  
1 5 10 15

Arg Thr Cys Ala Ala Leu Gly Val Asp Gly Ile Val Ile Val Asp Asp  
20 25 30

Gly Phe Ala Leu Leu Asp Arg Arg Leu Arg Arg Ala Ser Leu Gly Tyr  
35 40 45

Ala Glu Ser Val Pro Val Ile Arg Val Asp Asn Leu Glu Glu Phe Leu  
50 55 60

Ala His Leu Lys Glu Ser Gly Ile Trp Leu Leu Thr Thr Ser Gly Asp  
65 70 75 80

Gly Asn Ala Asp Pro Leu Asp Tyr Glu Asp Gly Ala Lys Arg Leu Ala  
85 90 95

Leu Val Phe Gly Ser Glu Thr Thr Gly Leu Ser Asn Leu Ala Leu Glu  
100 105 110

Pro Ala Asp Gln Arg Ile Arg Ile Pro Met Asn Gly Asp Val Arg Ser  
115 120 125

Leu Asn Val Ser Val Ala Val Gly Leu Leu Leu Tyr  
130 135 140

<210> 437

<211> 159

<212> PRT

<213> Homo sapiens

<400> 437

Leu Val Thr Gly Ala Ser Gly Gly Ile Gly Ala Ala Val Ala Arg Ala  
1 5 10 15

Leu Val Gln Gln Gly Leu Lys Val Val Gly Cys Ala Arg Thr Val Gly  
20 25 30

Asn Ile Glu Glu Leu Ala Ala Glu Cys Lys Ser Ala Gly Tyr Pro Gly  
35 40 45

Thr Leu Ile Pro Tyr Arg Cys Asp Leu Ser Asn Glu Glu Asp Ile Leu  
50 55 60



Ser Met Phe Ser Ala Ile Arg Ser Gln His Ser Gly Val Asp Ile Cys  
65 70 75 80

Ile Asn Asn Ala Gly Leu Ala Arg Pro Asp Thr Leu Leu Ser Gly Ser  
85 90 95

Thr Ser Gly Trp Lys Asp Met Phe Asn Val Asn Val Leu Ala Leu Ser  
100 105 110

Ile Cys Thr Arg Glu Ala Tyr Gln Ser Met Lys Glu Arg Asn Val Asp  
115 120 125

Asp Gly His Ile Ile Asn Ile Asn Ser Met Ser Gly His Arg Val Leu  
130 135 140

Pro Leu Ser Val Thr His Phe Tyr Ser Ala Thr Lys Tyr Ala Val  
145 150 155

<210> 438

<211> 152

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: NAD dependent  
epimerase/dehydratase family domain sequence

<400> 438

Leu Val Thr Gly Gly Ala Gly Phe Ile Gly Ser His Leu Val Arg Glu  
1 5 10 15

Leu Leu Asn Asn Gly Asp Asp Lys Val Val Val Leu Asp Asn Leu Thr  
20 25 30

Tyr Ala Gly Asn Glu Ala Arg Leu Arg Val Ile Glu Gly Gly Pro Arg  
35 40 45

Tyr Thr Phe Val Lys Gly Asp Ile Cys Asp Arg Asp Leu Leu Asp Lys  
50 55 60

Val Phe Ala Glu Asn Gln Pro Asp Ala Val Ile His Phe Ala Ala Glu  
65 70 75 80

Ser His Val Asp Arg Ser Ile Glu Lys Pro Leu Ala Tyr Ile Asp Thr  
85 90 95

Asn Val Val Gly Thr Leu Thr Leu Leu Glu Ala Ala Arg Lys Ala Gly  
100 105 110

Val Phe Lys Phe Val Phe Ser Ser Thr Asp Glu Val Tyr Gly Asp Leu  
115 120 125

Pro Ser Ile Pro Ile Thr Glu Asp Thr Pro Tyr Gly Pro Ser Ser Pro  
130 135 140

Tyr Gly Ala Ser Lys Ala Ser Ser  
145 150

<210> 439

<211> 796

<212> PRT

<213> Homo sapiens

<400> 439

Met Glu Ala Gly Gly Glu Arg Phe Leu Arg Gln Arg Gln Val Leu Leu  
1 5 10 15

Leu Phe Val Phe Leu Gly Gly Ser Leu Ala Gly Ser Glu Ser Arg Arg  
20 25 30

Tyr Ser Val Ala Glu Glu Lys Glu Lys Gly Phe Leu Ile Ala Asn Leu  
35 40 45

Ala Lys Asp Leu Gly Leu Arg Val Glu Glu Leu Ala Ala Arg Gly Ala  
50 55 60

Gln Val Val Ser Lys Gly Asn Lys Gln His Phe Gln Leu Ser His Gln  
65 70 75 80

Thr Gly Asp Leu Leu Leu Asn Glu Lys Leu Asp Arg Glu Glu Leu Cys  
85 90 95

Gly Pro Thr Glu Pro Cys Ile Leu His Phe Gln Ile Leu Leu Gln Asn  
100 105 110

Pro Leu Gln Phe Val Thr Asn Glu Leu Arg Ile Ile Asp Val Asn Asp  
115 120 125

His Ser Pro Val Phe Phe Glu Asn Glu Met His Leu Lys Ile Leu Glu  
130 135 140

Ser Thr Leu Pro Gly Thr Val Ile Pro Leu Gly Asn Ala Glu Asp Leu  
145 150 155 160



Tyr Asn Ile Thr Ile Thr Ile Thr Asp Leu Gly Thr Pro Arg Leu Lys		
420	425	430
Thr Lys Tyr Asn Ile Thr Val Leu Val Ser Asp Val Asn Asp Asn Ala		
435	440	445
Pro Ala Phe Thr Gln Ile Ser Tyr Thr Leu Phe Val Arg Glu Asn Asn		
450	455	460
Ser Pro Ala Leu His Ile Gly Ser Val Ser Ala Thr Asp Arg Asp Ser		
465	470	475 480
Gly Thr Asn Ala Gln Val Thr Tyr Ser Leu Leu Pro Pro Gln Asp Pro		
485	490	495
His Leu Pro Leu Ser Ser Leu Val Ser Ile Asn Ala Asp Asn Gly His		
500	505	510
Leu Phe Ala Leu Arg Ser Leu Asp Tyr Glu Ala Leu Gln Ala Phe Glu		
515	520	525
Phe Arg Val Gly Ala Thr Asp Arg Gly Ser Pro Ala Leu Ser Ser Glu		
530	535	540
Ala Leu Val Arg Val Leu Val Leu Asp Ala Asn Asp Asn Ser Pro Phe		
545	550	555 560
Val Leu Tyr Pro Leu Gln Asn Gly Ser Ala Pro Cys Thr Glu Leu Val		
565	570	575
Pro Arg Ala Ala Glu Pro Gly Tyr Leu Val Thr Lys Val Val Ala Val		
580	585	590
Asp Gly Asp Ser Gly Gln Asn Ala Trp Leu Ser Tyr Gln Leu Leu Lys		
595	600	605
Ala Thr Glu Pro Gly Leu Phe Gly Val Trp Ala His Asn Gly Glu Val		
610	615	620
Arg Thr Ala Arg Leu Leu Ser Glu Arg Asp Ala Ala Lys His Arg Leu		
625	630	635 640
Val Val Leu Val Lys Asp Asn Gly Glu Pro Pro Arg Ser Ala Thr Ala		
645	650	655
Thr Leu His Val Leu Leu Val Asp Gly Phe Ser Gln Pro Tyr Leu Pro		
660	665	670

Leu Pro Glu Ala Ala Pro Ala Gln Ala Gln Ala Asp Leu Leu Thr Val  
675 680 685

Tyr Leu Val Val Ala Leu Ala Ser Val Ser Ser Leu Phe Leu Phe Ser  
690 695 700

Val Leu Leu Phe Val Ala Val Arg Leu Cys Arg Arg Ser Arg Ala Ala  
705 710 715 720

Ser Val Gly Arg Cys Ser Val Pro Glu Gly Pro Phe Pro Gly Gln Met  
725 730 735

Val Asp Val Ser Gly Thr Gly Thr Leu Ser Gln Ser Tyr Gln Tyr Glu  
740 745 750

Val Cys Leu Thr Gly Gly Ser Gly Thr Asn Glu Phe Lys Phe Leu Lys  
755 760 765

Pro Ile Ile Pro Asn Phe Val Ala Gln Gly Ala Glu Arg Val Ser Glu  
770 775 780

Ala Asn Pro Ser Phe Arg Lys Ser Phe Glu Phe Ser  
785 790 795

<210> 440

<211> 798

<212> PRT

<213> Homo sapiens

<400> 440

Met Glu Ala Gly Glu Gly Lys Glu Arg Val Pro Lys Gln Arg Gln Val  
1 5 10 15

Leu Ile Phe Phe Val Leu Leu Gly Ile Ala Gln Ala Ser Cys Gln Pro  
20 25 30

Arg His Tyr Ser Val Ala Glu Glu Thr Glu Ser Gly Ser Phe Val Ala  
35 40 45

Asn Leu Leu Lys Asp Leu Gly Leu Glu Ile Gly Glu Leu Ala Val Arg  
50 55 60

Gly Ala Arg Val Val Ser Lys Gly Lys Lys Met His Leu Gln Phe Asp  
65 70 75 80

Arg Gln Thr Gly Asp Leu Leu Leu Asn Glu Lys Leu Asp Arg Glu Glu

85	90	95
Leu Cys Gly Pro Thr Glu Pro Cys Val Leu Pro Phe Gln Val Leu Leu		
100	105	110
Glu Asn Pro Leu Gln Phe Phe Gln Ala Glu Leu Arg Ile Arg Asp Val		
115	120	125
Asn Asp His Ser Pro Val Phe Leu Asp Lys Glu Ile Leu Leu Lys Ile		
130	135	140
Pro Glu Ser Ile Thr Pro Gly Thr Thr Phe Leu Ile Glu Arg Ala Gln		
145	150	155
Asp Leu Asp Val Gly Thr Asn Ser Leu Gln Asn Tyr Thr Ile Ser Pro		
165	170	175
Asn Phe His Phe His Leu Asn Leu Gln Asp Ser Leu Asp Gly Ile Ile		
180	185	190
Leu Pro Gln Leu Val Leu Asn Arg Ala Leu Asp Arg Glu Glu Gln Pro		
195	200	205
Glu Ile Arg Leu Thr Leu Thr Ala Leu Asp Gly Gly Ser Pro Pro Arg		
210	215	220
Ser Gly Thr Ala Leu Val Arg Ile Glu Val Val Asp Ile Asn Asp Asn		
225	230	235
Val Pro Glu Phe Ala Lys Leu Leu Tyr Glu Val Gln Ile Pro Glu Asp		
245	250	255
Ser Pro Val Gly Ser Gln Val Ala Ile Val Ser Ala Arg Asp Leu Asp		
260	265	270
Ile Gly Thr Asn Gly Glu Ile Ser Tyr Ala Phe Ser Gln Ala Ser Glu		
275	280	285
Asp Ile Arg Lys Thr Phe Arg Leu Ser Ala Lys Ser Gly Glu Leu Leu		
290	295	300
Leu Arg Gln Lys Leu Asp Phe Glu Ser Ile Gln Thr Tyr Thr Val Asn		
305	310	315
Ile Gln Ala Thr Asp Gly Gly Gly Leu Ser Gly Thr Cys Val Val Phe		
325	330	335
Val Gln Val Met Asp Leu Asn Asp Asn Pro Pro Glu Leu Thr Met Ser		



595	600	605
Leu Lys Ala Thr Glu Pro Gly Leu Phe Gly Val Trp Ala His Asn Gly		
610	615	620
Glu Val Arg Thr Ala Arg Leu Leu Arg Glu Arg Asp Ala Ala Lys Gln		
625	630	635
Arg Leu Val Val Leu Val Lys Asp Asn Gly Glu Pro Pro Arg Ser Ala		
645	650	655
Thr Ala Thr Leu His Val Leu Leu Val Asp Gly Phe Ser Gln Pro Tyr		
660	665	670
Leu Leu Leu Pro Glu Ala Ala Pro Ala Gln Ala Gln Ala Asp Leu Leu		
675	680	685
Thr Val Tyr Leu Val Val Ala Leu Ala Ser Val Ser Ser Leu Phe Leu		
690	695	700
Phe Ser Val Leu Leu Phe Val Ala Val Arg Leu Cys Arg Arg Ser Arg		
705	710	715
Ala Ala Ser Val Gly Arg Cys Ser Val Pro Glu Gly Pro Phe Pro Gly		
725	730	735
Gln Met Val Asp Val Ser Gly Thr Gly Thr Leu Ser Gln Ser Tyr Gln		
740	745	750
Tyr Glu Val Cys Leu Thr Gly Gly Ser Gly Thr Asn Glu Phe Lys Phe		
755	760	765
Leu Lys Pro Ile Ile Pro Asn Phe Val Ala Gln Gly Ala Glu Arg Val		
770	775	780
Ser Glu Ala Asn Pro Ser Phe Arg Lys Ser Phe Glu Phe Thr		
785	790	795

<210> 441

<211> 776

<212> PRT

<213> Homo sapiens

<400> 441

Met Glu Ile Gly Trp Met His Asn Arg Arg Gln Arg Gln Val Leu Val
1 5 10 15



Phe Phe Val Leu Leu Ser Leu Ser Gly Ala Gly Ala Glu Leu Gly Ser  
20 25 30  
Tyr Ser Val Val Glu Glu Thr Glu Arg Gly Ser Phe Val Ala Asn Leu  
35 40 45  
Gly Lys Asp Leu Gly Leu Gly Leu Thr Glu Met Ser Thr Arg Lys Ala  
50 55 60  
Arg Ile Ile Ser Gln Gly Asn Lys Gln His Leu Gln Leu Lys Ala Gln  
65 70 75 80  
Thr Gly Asp Leu Leu Ile Asn Glu Lys Leu Asp Arg Glu Glu Leu Cys  
85 90 95  
Gly Pro Thr Glu Pro Cys Ile Leu His Phe Gln Val Leu Met Glu Asn  
100 105 110  
Pro Leu Glu Ile Phe Gln Ala Glu Leu Arg Val Ile Asp Ile Asn Asp  
115 120 125  
His Ser Pro Met Phe Thr Glu Lys Glu Met Ile Leu Lys Ile Pro Glu  
130 135 140  
Asn Ser Pro Leu Gly Thr Glu Phe Pro Leu Asn His Ala Leu Asp Leu  
145 150 155 160  
Asp Val Gly Ser Asn Asn Val Gln Asn Tyr Lys Ile Ser Pro Ser Ser  
165 170 175  
His Phe Arg Val Leu Ile His Glu Phe Arg Asp Gly Arg Lys Tyr Pro  
180 185 190  
Glu Leu Val Leu Asp Lys Glu Leu Asp Arg Glu Glu Glu Pro Gln Leu  
195 200 205  
Arg Leu Thr Leu Thr Ala Leu Asp Gly Gly Ser Pro Pro Arg Ser Gly  
210 215 220  
Thr Ala Gln Val Arg Ile Glu Val Val Asp Ile Asn Asp Asn Ala Pro  
225 230 235 240  
Glu Phe Glu Gln Pro Ile Tyr Lys Val Gln Ile Pro Glu Asn Ser Pro  
245 250 255  
Leu Gly Ser Leu Val Ala Thr Val Ser Ala Arg Asp Leu Asp Gly Gly  
260 265 270

Ala Asn Gly Lys Ile Ser Tyr Thr Leu Phe Gln Pro Ser Glu Asp Ile  
 275 280 285

Ser Lys Thr Leu Glu Val Asn Pro Met Thr Gly Glu Val Arg Leu Arg  
 290 295 300

Lys Gln Val Asp Phe Glu Met Val Thr Ser Tyr Glu Val Arg Ile Lys  
 305 310 315 320

Ala Thr Asp Gly Gly Gly Leu Ser Gly Lys Cys Thr Leu Leu Leu Gln  
 325 330 335

Val Val Asp Val Asn Asp Asn Pro Pro Gln Val Thr Met Ser Ala Leu  
 340 345 350

Thr Ser Pro Ile Pro Glu Asn Ser Pro Glu Ile Val Val Ala Val Phe  
 355 360 365

Ser Val Ser Asp Pro Asp Ser Gly Asn Asn Gly Lys Thr Ile Ser Ser  
 370 375 380

Ile Gln Glu Asp Leu Pro Phe Leu Leu Lys Pro Ser Val Lys Asn Phe  
 385 390 395 400

Tyr Thr Leu Val Thr Glu Arg Ala Leu Asp Arg Glu Ala Arg Ala Glu  
 405 410 415

Tyr Asn Ile Thr Leu Thr Val Thr Asp Met Gly Thr Pro Arg Leu Lys  
 420 425 430

Thr Glu His Asn Ile Thr Val Gln Ile Ser Asp Val Asn Asp Asn Ala  
 435 440 445

Pro Thr Phe Thr Gln Thr Ser Tyr Thr Leu Phe Val Arg Glu Asn Asn  
 450 455 460

Ser Pro Ala Leu His Ile Gly Ser Val Ser Ala Thr Asp Arg Asp Ser  
 465 470 475 480

Gly Thr Asn Ala Gln Val Thr Tyr Ser Leu Leu Pro Pro Gln Asp Pro  
 485 490 495

His Leu Pro Leu Ala Ser Leu Val Ser Ile Asn Ala Asp Asn Gly His  
 500 505 510

Leu Phe Ala Leu Arg Ser Leu Asp Tyr Glu Ala Leu Gln Ala Phe Glu  
 515 520 525

Phe Arg Val Gly Ala Thr Asp Arg Gly Ser Pro Ala Leu Ser Arg Glu  
530 535 540

Ala Leu Val Arg Val Leu Val Leu Asp Ala Asn Asp Asn Ser Pro Phe  
545 550 555 560

Val Leu Tyr Pro Leu Gln Asn Gly Ser Ala Pro Cys Thr Glu Leu Val  
565 570 575

Pro Arg Ala Ala Glu Pro Gly Tyr Leu Val Thr Lys Val Val Ala Val  
580 585 590

Asp Gly Asp Ser Gly Gln Asn Ala Trp Leu Ser Tyr Gln Leu Leu Lys  
595 600 605

Ala Thr Glu Pro Gly Leu Phe Gly Val Trp Ala His Asn Gly Glu Val  
610 615 620

Arg Thr Ala Arg Leu Leu Ser Glu Arg Asp Ala Ala Lys Gln Arg Leu  
625 630 635 640

Val Val Leu Val Lys Asp Asn Gly Glu Pro Pro Arg Ser Ala Thr Ala  
645 650 655

Thr Leu His Val Leu Leu Val Asp Gly Phe Ser Gln Pro Phe Leu Pro  
660 665 670

Leu Pro Glu Ala Ala Pro Gly Gln Thr Gln Ala Asn Ser Leu Thr Val  
675 680 685

Tyr Leu Val Val Ala Leu Ala Ser Val Ser Ser Leu Phe Leu Phe Ser  
690 695 700

Val Leu Leu Phe Val Ala Val Arg Leu Cys Arg Arg Ser Arg Ala Ala  
705 710 715 720

Ser Val Gly Arg Cys Ser Met Pro Glu Gly Pro Phe Pro Gly Arg Leu  
725 730 735

Val Asp Val Ser Gly Thr Gly Thr Leu Ser Gln Ser Tyr Gln Tyr Glu  
740 745 750

Val Cys Leu Thr Gly Gly Ser Glu Thr Ser Glu Phe Lys Phe Leu Lys  
755 760 765

Pro Ile Ile Pro Asn Phe Ser Pro  
770 775

<210> 442

<211> 776

<212> PRT

<213> Homo sapiens

<400> 442

Met Glu Ile Gly Trp Met His Asn Arg Arg Gln Arg Gln Val Leu Val  
1 5 10 15

Phe Phe Val Leu Leu Ser Leu Ser Gly Ala Gly Ala Glu Leu Gly Ser  
20 25 30

Tyr Ser Val Val Glu Glu Thr Glu Arg Gly Ser Phe Val Ala Asn Leu  
35 40 45

Gly Lys Asp Leu Gly Leu Gly Leu Thr Glu Met Ser Thr Arg Lys Ala  
50 55 60

Arg Ile Ile Ser Gln Gly Asn Lys Gln His Leu Gln Leu Lys Ala Gln  
65 70 75 80

Thr Gly Asp Leu Leu Ile Asn Glu Lys Leu Asp Arg Glu Glu Leu Cys  
85 90 95

Gly Pro Thr Glu Pro Cys Ile Leu His Phe Gln Val Leu Met Glu Asn  
100 105 110

Pro Leu Glu Ile Phe Gln Ala Glu Leu Arg Val Ile Asp Ile Asn Asp  
115 120 125

His Ser Pro Met Phe Thr Glu Lys Glu Met Ile Leu Lys Ile Pro Glu  
130 135 140

Asn Ser Pro Leu Gly Thr Glu Phe Pro Leu Asn His Ala Leu Asp Leu  
145 150 155 160

Asp Val Gly Ser Asn Asn Val Gln Asn Tyr Lys Ile Ser Pro Ser Ser  
165 170 175

His Phe Arg Val Leu Ile His Glu Phe Arg Asp Gly Arg Lys Tyr Pro  
180 185 190

Glu Leu Val Leu Asp Lys Glu Leu Asp Arg Glu Glu Glu Pro Gln Leu  
195 200 205

Arg Leu Thr Leu Thr Ala Leu Asp Gly Gly Ser Pro Pro Arg Ser Gly  
210 215 220

Thr	Ala	Gln	Val	Arg	Ile	Glu	Val	Val	Asp	Ile	Asn	Asp	Asn	Ala	Pro	225		230		235		240
Glu	Phe	Glu	Gln	Pro	Ile	Tyr	Lys	Val	Gln	Ile	Pro	Glu	Asn	Ser	Pro		245		250		255	
Leu	Gly	Ser	Leu	Val	Ala	Thr	Val	Ser	Ala	Arg	Asp	Leu	Asp	Gly	Gly		260		265		270	
Ala	Asn	Gly	Lys	Ile	Ser	Tyr	Thr	Leu	Phe	Gln	Pro	Ser	Glu	Asp	Ile		275		280		285	
Ser	Lys	Thr	Leu	Glu	Val	Asn	Pro	Met	Thr	Gly	Glu	Val	Arg	Leu	Arg	290		295		300		
Lys	Gln	Val	Asp	Phe	Glu	Met	Val	Thr	Ser	Tyr	Glu	Val	Arg	Ile	Lys	305		310		315		320
Ala	Thr	Asp	Gly	Gly	Gly	Leu	Ser	Gly	Lys	Cys	Thr	Leu	Leu	Leu	Gln		325		330		335	
Val	Val	Asp	Val	Asn	Asp	Asn	Pro	Pro	Gln	Val	Thr	Met	Ser	Ala	Leu		340		345		350	
Thr	Ser	Pro	Ile	Pro	Glu	Asn	Ser	Pro	Glu	Ile	Val	Val	Ala	Val	Phe		355		360		365	
Ser	Val	Ser	Asp	Pro	Asp	Ser	Gly	Asn	Asn	Gly	Lys	Thr	Ile	Ser	Ser	370		375		380		
Ile	Gln	Glu	Asp	Leu	Pro	Phe	Leu	Leu	Lys	Pro	Ser	Val	Lys	Asn	Phe	385		390		395		400
Tyr	Thr	Leu	Val	Thr	Glu	Arg	Ala	Leu	Asp	Arg	Glu	Ala	Arg	Ala	Glu		405		410		415	
Tyr	Asn	Ile	Thr	Leu	Thr	Val	Thr	Asp	Met	Gly	Thr	Pro	Arg	Leu	Lys		420		425		430	
Thr	Glu	His	Asn	Ile	Thr	Val	Gln	Ile	Ser	Asp	Val	Asn	Asp	Asn	Ala		435		440		445	
Pro	Thr	Phe	Thr	Gln	Thr	Ser	Tyr	Thr	Leu	Phe	Val	Arg	Glu	Asn	Asn		450		455		460	
Ser	Pro	Ala	Leu	His	Ile	Gly	Ser	Val	Ser	Ala	Thr	Asp	Arg	Asp	Ser	465		470		475		480

Gly Thr Asn Ala Gln Val Thr Tyr Ser Leu Leu Pro Pro Gln Asp Pro	485	490	495
His Leu Pro Leu Ala Ser Leu Val Ser Ile Asn Ala Asp Asn Gly His	500	505	510
Leu Phe Ala Leu Arg Ser Leu Asp Tyr Glu Ala Leu Arg Glu Phe Glu	515	520	525
Phe Arg Val Ser Ala Thr Asp Arg Gly Ser Pro Ala Leu Ser Ser Glu	530	535	540
Ala Leu Val Arg Val Leu Val Leu Asp Ala Asn Asp Asn Ser Pro Phe	545	550	555
Val Leu Tyr Pro Leu Gln Asn Gly Ser Ala Pro Cys Thr Glu Leu Val	565	570	575
Pro Arg Ala Ala Glu Pro Gly Tyr Leu Val Thr Lys Val Val Ala Val	580	585	590
Asp Gly Asp Ser Gly Gln Asn Ala Trp Leu Ser Tyr Gln Leu Leu Lys	595	600	605
Ala Thr Glu Pro Gly Leu Phe Gly Val Trp Ala His Asn Gly Glu Val	610	615	620
Arg Thr Ala Arg Leu Leu Ser Glu Arg Asp Ala Ala Lys Gln Arg Leu	625	630	635
Val Val Leu Val Lys Asp Asn Gly Glu Pro Pro Arg Ser Ala Thr Ala	645	650	655
Thr Leu His Val Leu Leu Val Asp Gly Phe Ser Gln Pro Phe Leu Pro	660	665	670
Leu Pro Glu Ala Ala Pro Gly Gln Thr Gln Ala Asn Ser Leu Thr Val	675	680	685
Tyr Leu Val Val Ala Leu Ala Ser Val Ser Ser Leu Phe Leu Phe Ser	690	695	700
Val Leu Leu Phe Val Ala Val Arg Leu Cys Arg Arg Ser Arg Ala Ala	705	710	715
Ser Val Gly Arg Cys Ser Met Pro Glu Gly Pro Phe Pro Gly Arg Leu	725	730	735

Val Asp Val Ser Gly Thr Gly Thr Leu Ser Gln Ser Tyr Gln Tyr Glu  
740 745 750

Val Cys Leu Thr Gly Gly Ser Glu Thr Ser Glu Phe Lys Phe Leu Lys  
755 760 765

Pro Ile Ile Pro Asn Phe Ser Pro  
770 775

<210> 443

<211> 787

<212> PRT

<213> Homo sapiens

<400> 443

Ser Phe Cys Glu Pro Thr Phe Gln Glu Lys Ala Met Glu Ile Gly Trp  
1 5 10 15

Met His Asn Arg Arg Gln Arg Gln Val Leu Val Phe Phe Val Leu Leu  
20 25 30

Ser Leu Ser Gly Ala Gly Ala Glu Leu Gly Ser Tyr Ser Val Val Glu  
35 40 45

Glu Thr Glu Arg Gly Ser Phe Val Ala Asn Leu Gly Lys Asp Leu Gly  
50 55 60

Leu Gly Leu Thr Glu Met Ser Thr Arg Lys Ala Arg Ile Ile Ser Gln  
65 70 75 80

Gly Asn Lys Gln His Leu Gln Leu Lys Ala Gln Thr Gly Asp Leu Leu  
85 90 95

Ile Asn Glu Lys Leu Asp Arg Glu Glu Leu Cys Gly Pro Thr Glu Pro  
100 105 110

Cys Ile Leu His Phe Gln Val Leu Met Glu Asn Pro Leu Glu Ile Phe  
115 120 125

Gln Ala Glu Leu Arg Val Ile Asp Ile Asn Asp His Ser Pro Met Phe  
130 135 140

Thr Glu Lys Glu Met Ile Leu Lys Ile Pro Glu Asn Ser Pro Leu Gly  
145 150 155 160

Thr Glu Phe Pro Leu Asn His Ala Leu Asp Leu Asp Val Gly Ser Asn





420	425	430
Thr Val Thr Asp Met Gly Thr	Pro Arg Leu Lys Thr	Glu His Asn Ile
435	440	445
Thr Val Gln Ile Ser Asp Val	Asn Asp Asn Ala Pro Thr	Phe Thr Gln
450	455	460
Thr Ser Tyr Thr Leu Phe Val	Arg Glu Asn Asn Ser Pro	Ala Leu His
465	470	475 480
Ile Gly Ser Val Ser Ala Thr	Asp Arg Asp Ser Gly Ile	Asn Ala Gln
485	490	495
Val Thr Tyr Ser Leu Leu Pro	Pro Gln Asp Pro His Leu	Pro Leu Ala
500	505	510
Ser Leu Val Ser Ile Asn Ala	Asp Asn Gly His Leu Phe	Ala Leu Arg
515	520	525
Ser Leu Asp Tyr Glu Ala Leu	Arg Glu Phe Glu Phe Arg	Val Ser Ala
530	535	540
Thr Asp Arg Gly Ser Pro Ala	Leu Ser Ser Glu Ala Leu	Val Arg Val
545	550	555 560
Leu Val Leu Asp Ala Asn Asp	Asn Ser Pro Phe Val Leu	Tyr Pro Leu
565	570	575
Gln Asn Gly Ser Ala Pro Cys	Thr Glu Leu Val Pro Arg	Ala Ala Glu
580	585	590
Pro Gly Tyr Leu Val Thr Lys	Val Val Ala Val Asp Gly	Asp Ser Gly
595	600	605
Gln Asn Ala Trp Leu Ser Tyr	Gln Leu Leu Lys Ala Thr	Glu Pro Gly
610	615	620
Leu Phe Gly Val Trp Ala His	Asn Gly Glu Val Arg Thr	Ala Arg Leu
625	630	635 640
Leu Ser Glu Arg Asp Ala Ala	Lys His Arg Leu Val Val	Leu Val Lys
645	650	655
Asp Asn Gly Glu Pro Pro Cys	Ser Ala Thr Ala Thr Leu	His Val Leu
660	665	670
Leu Val Asp Gly Phe Ser Gln	Pro Phe Leu Pro Leu Pro	Glu Ala Ala

675	680	685
Pro Gly Gln Thr Gln Ala Asn Ser Leu Thr Val Tyr Leu Val Val Ala		
690	695	700
Leu Ala Ser Val Ser Ser Leu Phe Leu Phe Ser Val Leu Leu Phe Val		
705	710	715
Val Val Arg Leu Cys Arg Arg Ser Arg Ala Ala Ser Val Gly Arg Cys		
	725	730
Ser Met Pro Glu Gly Pro Phe Pro Gly Arg Leu Val Asp Val Ser Gly		
	740	745
Thr Gly Thr Leu Ser Gln Ser Tyr Gln Tyr Glu Val Cys Leu Thr Gly		
	755	760
Gly Ser Glu Thr Ser Glu Phe Lys Phe Leu Lys Pro Ile Ile Pro Asn		
	770	775
		780
Phe Ser Pro		
785		

<210> 444  
 <211> 87  
 <212> PRT  
 <213> Homo sapiens

<400> 444
Val Ser Ala Thr Asp Arg Asp Ser Gly Thr Asn Ala Gln Val Thr Tyr
1 5 10 15
Ser Leu Leu Pro Pro Gln Asp Pro His Leu Pro Leu Ser Ser Leu Val
20 25 30
Ser Ile Asn Ala Asp Asn Gly His Leu Phe Ala Leu Arg Ser Leu Asp
35 40 45
Tyr Glu Ala Leu Gln Ala Phe Glu Phe Arg Val Gly Ala Thr Asp Arg
50 55 60
Gly Ser Pro Ala Leu Ser Ser Glu Ala Leu Val Arg Val Leu Val Leu
65 70 75 80
Asp Ala Asn Asp Asn Ser Pro
85

<210> 445

<211> 82

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Cadherin  
repeats domain sequence

<400> 445

Val Ser Ala Thr Asp Ala Asp Ser Gly Glu Asn Gly Lys Val Thr Tyr  
1 5 10 15

Ser Ile Leu Ser Gly Asn Asp Gly Gly Leu Phe Ser Ile Asp Pro Glu  
20 25 30

Thr Gly Ile Ile Thr Thr Thr Lys Pro Leu Asp Arg Glu Glu Gln Ser  
35 40 45

Glu Tyr Thr Leu Thr Val Glu Ala Thr Asp Gly Gly Gly Pro Pro Leu  
50 55 60

Ser Ser Thr Ala Thr Val Thr Val Thr Val Leu Asp Val Asn Asp Asn  
65 70 75 80

Ala Pro

<210> 446

<211> 82

<212> PRT

<213> Homo sapiens

<400> 446

Val Ser Ala Arg Asp Leu Asp Ile Gly Thr Asn Gly Glu Ile Ser Tyr  
1 5 10 15

Ala Phe Ser Gln Ala Ser Glu Asp Ile Arg Lys Thr Phe Arg Leu Ser  
20 25 30

Ala Lys Ser Gly Glu Leu Leu Leu Arg Gln Lys Leu Asp Phe Glu Ser  
35 40 45

Ile Gln Thr Tyr Thr Val Asn Ile Gln Ala Thr Asp Gly Gly Gly Leu  
50 55 60

Ser Gly Lys Ser Thr Val Ile Val Gln Val Val Asp Val Asn Asp Asn  
65 70 75 80

Pro Pro

<210> 447

<211> 85

<212> PRT

<213> Homo sapiens

<400> 447

Asn Ala Glu Asp Leu Asp Val Gly Arg Asn Ser Leu Gln Asn Tyr Thr  
1 5 10 15

Ile Thr Pro Asn Ser His Phe His Val Pro Thr Arg Ser Arg Arg Asp  
20 25 30

Gly Arg Lys Tyr Pro Glu Leu Val Leu Asn Arg Ala Leu Asp Arg Glu  
35 40 45

Glu Gln Pro Glu Ile Arg Leu Thr Leu Thr Ala Leu Asp Gly Gly Ser  
50 55 60

Pro Pro Arg Ser Gly Thr Ala Leu Val Arg Ile Glu Val Val Asp Ile  
65 70 75 80

Asn Asp Asn Val Pro  
85

<210> 448

<211> 81

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Cadherin  
repeats domain sequence

<400> 448

Ser Ala Thr Asp Ala Asp Ser Gly Glu Asn Gly Lys Val Thr Tyr Ser  
1 5 10 15

Ile Leu Ser Gly Asn Asp Gly Gly Leu Phe Ser Ile Asp Pro Glu Thr  
20 25 30

Gly Ile Ile Thr Thr Thr Lys Pro Leu Asp Arg Glu Glu Gln Ser Glu  
35 40 45

Tyr Thr Leu Thr Val Glu Ala Thr Asp Gly Gly Gly Pro Pro Leu Ser  
50 55 60

Ser Thr Ala Thr Val Thr Val Thr Val Leu Asp Val Asn Asp Asn Ala  
65 70 75 80

Pro

<210> 449

<211> 81

<212> PRT

<213> Homo sapiens

<400> 449

Ser Val Ser Asp Leu Asp Ser Gly Asp Asn Gly Arg Val Met Cys Ser  
1 5 10 15

Ile Glu Asn Asn Leu Pro Phe Phe Leu Lys Pro Ser Val Glu Asn Phe  
20 25 30

Tyr Thr Leu Val Ser Glu Gly Ala Leu Asp Arg Glu Thr Arg Ser Glu  
35 40 45

Tyr Asn Ile Thr Ile Thr Ile Thr Asp Leu Gly Thr Pro Arg Leu Lys  
50 55 60

Thr Lys Tyr Asn Ile Thr Val Leu Val Ser Asp Val Asn Asp Asn Ala  
65 70 75 80

Pro

<210> 450

<211> 76

<212> PRT

<213> Homo sapiens

<400> 450

Val Val Ala Val Asp Gly Asp Ser Gly Gln Asn Ala Trp Leu Ser Tyr  
1 5 10 15

Gln Leu Leu Lys Ala Thr Glu Pro Gly Leu Phe Gly Val Trp Ala His

	20		25		30
Asn Gly Glu Val Arg Thr Ala Arg Leu Leu Arg Glu Arg Asp Ala Ala					
	35		40		45
Lys Gln Arg Leu Val Val Leu Val Lys Asp Asn Gly Glu Pro Pro Arg					
	50		55		60
Ser Ala Thr Ala Thr Leu His Val Leu Leu Val Asp					
	65		70		75

<210> 451

<211> 76

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Cadherin  
repeats domain sequence

<400> 451

Val Ser Ala Thr Asp Ala Asp Ser Gly Glu Asn Gly Lys Val Thr Tyr
1 5 10 15

Ser Ile Leu Ser Gly Asn Asp Gly Gly Leu Phe Ser Ile Asp Pro Glu
20 25 30

Thr Gly Ile Ile Thr Thr Thr Lys Pro Leu Asp Arg Glu Glu Gln Ser
35 40 45

Glu Tyr Thr Leu Thr Val Glu Ala Thr Asp Gly Gly Gly Pro Pro Leu
50 55 60

Ser Ser Thr Ala Thr Val Thr Val Thr Val Leu Asp
65 70 75

<210> 452

<211> 91

<212> PRT

<213> Homo sapiens

<400> 452

Tyr Glu Val Gln Ile Pro Glu Asp Ser Pro Val Gly Ser Gln Val Ala
1 5 10 15

Ile Val Ser Ala Arg Asp Leu Asp Ile Gly Thr Asn Gly Glu Ile Ser

	20		25		30										
Tyr	Ala	Phe	Ser	Gln	Ala	Ser	Glu	Asp	Ile	Arg	Lys	Thr	Phe	Arg	Leu
	35						40					45			
Ser	Ala	Lys	Ser	Gly	Glu	Leu	Leu	Leu	Arg	Gln	Lys	Leu	Asp	Phe	Glu
	50					55					60				
Ser	Ile	Gln	Thr	Tyr	Thr	Val	Asn	Ile	Gln	Ala	Thr	Asp	Gly	Gly	Gly
	65				70				75					80	
Leu	Ser	Gly	Lys	Ser	Thr	Val	Ile	Val	Gln	Val					
			85						90						

<210> 453

<211> 91

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Cadherin  
repeats domain sequence

<400> 453

Tyr	Ser	Ala	Ser	Val	Pro	Glu	Asn	Ala	Pro	Val	Gly	Thr	Glu	Val	Leu
1				5					10					15	
Thr	Val	Thr	Ala	Thr	Asp	Ala	Asp	Leu	Gly	Pro	Asn	Gly	Arg	Ile	Phe
			20					25					30		
Tyr	Ser	Ile	Leu	Gly	Gly	Gly	Pro	Gly	Gly	Trp	Phe	Arg	Ile	Asp	Pro
	35						40					45			
Asp	Thr	Gly	Asp	Leu	Ser	Thr	Thr	Lys	Pro	Leu	Asp	Arg	Glu	Ser	Ile
	50					55					60				
Gly	Glu	Tyr	Glu	Leu	Thr	Val	Leu	Ala	Thr	Asp	Ser	Gly	Gly	Pro	Pro
	65				70				75					80	
Leu	Ser	Gly	Thr	Thr	Thr	Val	Thr	Ile	Thr	Val					
			85						90						

<210> 454

<211> 97

<212> PRT

<213> Homo sapiens

<400> 454

Tyr Thr Leu Phe Val Arg Glu Asn Asn Ser Pro Ala Leu His Ile Gly  
1 5 10 15

Ser Val Ser Ala Thr Asp Arg Asp Ser Gly Thr Asn Ala Gln Val Thr  
20 25 30

Tyr Ser Leu Leu Pro Pro Gln Asp Pro His Leu Pro Leu Ser Ser Leu  
35 40 45

Val Ser Ile Asn Ala Asp Asn Gly His Leu Phe Ala Leu Arg Ser Leu  
50 55 60

Asp Tyr Glu Ala Leu Gln Ala Phe Glu Phe Arg Val Gly Ala Thr Asp  
65 70 75 80

Arg Gly Ser Pro Ala Leu Ser Ser Glu Ala Leu Val Arg Val Leu Val  
85 90 95

Leu

<210> 455

<211> 92

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Cadherin  
repeats domain sequence

<400> 455

Tyr Ser Ala Ser Val Pro Glu Asn Ala Pro Val Gly Thr Glu Val Leu  
1 5 10 15

Thr Val Thr Ala Thr Asp Ala Asp Leu Gly Pro Asn Gly Arg Ile Phe  
20 25 30

Tyr Ser Ile Leu Gly Gly Gly Pro Gly Gly Trp Phe Arg Ile Asp Pro  
35 40 45

Asp Thr Gly Asp Leu Ser Thr Thr Lys Pro Leu Asp Arg Glu Ser Ile  
50 55 60

Gly Glu Tyr Glu Leu Thr Val Leu Ala Thr Asp Ser Gly Gly Pro Pro  
65 70 75 80



Leu Ser Gly Thr Thr Thr Val Thr Ile Thr Val Leu  
85 90

<210> 456

<211> 85

<212> PRT

<213> Homo sapiens

<400> 456

Val Pro Arg Ala Ala Glu Pro Gly Tyr Leu Val Thr Lys Val Val Ala  
1 5 10 15

Val Asp Gly Asp Ser Gly Gln Asn Ala Trp Leu Ser Tyr Gln Leu Leu  
20 25 30

Lys Ala Thr Glu Pro Gly Leu Phe Gly Val Trp Ala His Asn Gly Glu  
35 40 45

Val Arg Thr Ala Arg Leu Leu Arg Glu Arg Asp Ala Ala Lys Gln Arg  
50 55 60

Leu Val Val Leu Val Lys Asp Asn Gly Glu Pro Pro Arg Ser Ala Thr  
65 70 75 80

Ala Thr Leu His Val  
85

<210> 457

<211> 85

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Cadherin  
repeats domain sequence

<400> 457

Val Pro Glu Asn Ala Pro Val Gly Thr Glu Val Leu Thr Val Thr Ala  
1 5 10 15

Thr Asp Ala Asp Leu Gly Pro Asn Gly Arg Ile Phe Tyr Ser Ile Leu  
20 25 30

Gly Gly Gly Pro Gly Gly Trp Phe Arg Ile Asp Pro Asp Thr Gly Asp  
35 40 45

Leu Ser Thr Thr Lys Pro Leu Asp Arg Glu Ser Ile Gly Glu Tyr Glu  
50 55 60

Leu Thr Val Leu Ala Thr Asp Ser Gly Gly Pro Pro Leu Ser Gly Thr  
65 70 75 80

Thr Thr Val Thr Ile  
85

<210> 458

<211> 91

<212> PRT

<213> Homo sapiens

<400> 458

Ile Leu Glu Ser Thr Leu Pro Gly Thr Val Ile Pro Leu Gly Asn Ala  
1 5 10 15

Glu Asp Leu Asp Val Gly Arg Asn Ser Leu Gln Asn Tyr Thr Ile Thr  
20 25 30

Pro Asn Ser His Phe His Val Pro Thr Arg Ser Arg Arg Asp Gly Arg  
35 40 45

Lys Tyr Pro Glu Leu Val Leu Asn Arg Ala Leu Asp Arg Glu Glu Gln  
50 55 60

Pro Glu Ile Arg Leu Thr Leu Thr Ala Leu Asp Gly Gly Ser Pro Pro  
65 70 75 80

Arg Ser Gly Thr Ala Leu Val Arg Ile Glu Val  
85 90

<210> 459

<211> 87

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Cadherin  
repeats domain sequence

<400> 459

Val Pro Glu Asn Ala Pro Val Gly Thr Glu Val Leu Thr Val Thr Ala  
1 5 10 15

Thr Asp Ala Asp Leu Gly Pro Asn Gly Arg Ile Phe Tyr Ser Ile Leu  
                   20                                  25                                  30  
 Gly Gly Gly Pro Gly Gly Trp Phe Arg Ile Asp Pro Asp Thr Gly Asp  
                   35                                  40                                  45  
 Leu Ser Thr Thr Lys Pro Leu Asp Arg Glu Ser Ile Gly Glu Tyr Glu  
                   50                                  55                                  60  
 Leu Thr Val Leu Ala Thr Asp Ser Gly Gly Pro Pro Leu Ser Gly Thr  
                   65                                  70                                  75                                  80  
 Thr Thr Val Thr Ile Thr Val  
                                   85

<210> 460  
 <211> 86  
 <212> PRT  
 <213> Homo sapiens

<400> 460  
 Ile Pro Glu Asn Ser Gly Glu Thr Val Leu Ala Val Phe Ser Val Ser  
           1                                  5                                  10                                  15  
 Asp Leu Asp Ser Gly Asp Asn Gly Arg Val Met Cys Ser Ile Glu Asn  
                   20                                  25                                  30  
 Asn Leu Pro Phe Phe Leu Lys Pro Ser Val Glu Asn Phe Tyr Thr Leu  
                   35                                  40                                  45  
 Val Ser Glu Gly Ala Leu Asp Arg Glu Thr Arg Ser Glu Tyr Asn Ile  
                   50                                  55                                  60  
 Thr Ile Thr Ile Thr Asp Leu Gly Thr Pro Arg Leu Lys Thr Lys Tyr  
                   65                                  70                                  75                                  80  
 Asn Ile Thr Val Leu Val  
                                   85

<210> 461  
 <211> 22  
 <212> DNA  
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 461

atgtgatctt tggctgtgaa gt

22

<210> 462

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 462

ctaccccatg gcctccatcg agt

23

<210> 463

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 463

ggatgtccaa gccatcctt

19

<210> 464

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 464

ctgcaaccac atgatcatatc aa

22

<210> 465

<211> 26

<212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: PCR Primer  
           sequence  
  
 <400> 465  
 atcaggggaac ctgaccacac ttgtaa 26  
  
  
 <210> 466  
 <211> 22  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: PCR Primer  
           sequence  
  
 <400> 466  
 atggatgaag acatgctcct tt 22  
  
  
 <210> 467  
 <211> 22  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: PCR Primer  
           sequence  
  
 <400> 467  
 actggtgctg aagatcatga gt 22  
  
  
 <210> 468  
 <211> 26  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: PCR Primer  
           sequence  
  
 <400> 468  
 cacctttgca cctatctctg accggt 26

<210> 469  
<211> 21  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 469  
aggctccagg ctgagtagac t 21

<210> 470  
<211> 22  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 470  
tacgagaact tcctggaaga ca 22

<210> 471  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 471  
aagcccttat gaccgcatg gaatat 26

<210> 472  
<211> 21  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PCR Primer

sequence

<400> 472

attacagcgc ttttgatga a

21

<210> 473

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 473

acaaggtcat ggaggaattc at

22

<210> 474

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 474

agcttttctca ggaccctgcc cgt

23

<210> 475

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 475

tgggtaacgt ccaggaagat

20

<210> 476

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 476

acaaggtcat ggaggaattc at

22

<210> 477

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 477

agcttttctca ggaccctgcc cgt

23

<210> 478

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 478

tgggtaacgt ccaggaagat

20

<210> 479

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 479

cctcatcctt ttcattgttca ga

22



<210> 480  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 480  
actcctcagt accggttccg gaagag 26

<210> 481  
<211> 22  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 481  
gccgtaaaac atcactttgt ct 22

<210> 482  
<211> 22  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 482  
cctcatcctt ttcattgtca ga 22

<210> 483  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 483  
actcctcagt accggttccg gaagag 26

<210> 484  
<211> 22  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 484  
gccgtaaaac atcactttgt ct 22

<210> 485  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 485  
cagggtcgaa tctggaatgg 20

<210> 486  
<211> 25  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 486  
tctggcttca gctatcaggg caccc 25

<210> 487  
<211> 19  
<212> DNA  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 487

cccgtcatcc gtttccaat

19

<210> 488

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 488

gctccttcta cttcgccatc

20

<210> 489

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 489

tcatactac catcgagtac ggccac

26

<210> 490

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 490

acatgcagaa gaccttgcc

19

<210> 491  
<211> 21  
<212> DNA  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 491  
acagactccc agatggtgtc t

21

<210> 492  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 492  
ctcctccaag gagcctcact gctgag

26

<210> 493  
<211> 22  
<212> DNA  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 493  
ggctgccttc aatagtaaca ga

22

<210> 494  
<211> 19  
<212> DNA  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 494  
caagtacggt gagcccaaa 19

<210> 495  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 495  
ctgtccctgg gacaccagct ggt 23

<210> 496  
<211> 22  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 496  
caggttgacg taggtgaaga tg 22

<210> 497  
<211> 21  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 497  
gaagatgtct gtgcaccgga t 21

<210> 498  
<211> 28  
<212> DNA  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 498

cacccatcca gactttgaga agctccac

28

<210> 499

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 499

catggcaatg tcactcccaa

20

<210> 500

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 500

attgacttct ggaagccaga tt

22

<210> 501

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 501

tgtcacacaa atcaaacctc acagtaca

28

<210> 502

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<220>  
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sequence

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cttctgcttt aacacggaag tc 22

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<220>  
<223> Description of Artificial Sequence: PCR Primer  
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<400> 503  
tggtggtaga cctgcttctg 20

<210> 504  
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<220>  
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<400> 504  
gacctacgtt accacctgca gcagaa 26

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<223> Description of Artificial Sequence: PCR Primer  
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<400> 505

ctcactgtgt cctcggagaa . 20

<210> 506

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
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<400> 506

ctggtacgga ttgaagttgt g 21

<210> 507

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
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<400> 507

catcaatgac aacgtcccag agtt 24

<210> 508

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
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<400> 508

gttccaatgt ctaaatccct g 21

<210> 509

<211> 22

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<213> Artificial Sequence

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<223> Description of Artificial Sequence: PCR Primer  
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<400> 509

attgcacggg agaataataa aa

22

<210> 510

<211> 26

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<223> Description of Artificial Sequence: PCR Primer  
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<400> 510

ccaagggcca agagaatatc cgaact

26

<210> 511

<211> 22

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<223> Description of Artificial Sequence: PCR Primer  
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<400> 511

tcacattcta gcaaaccat tc

22

<210> 512

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 512

tgccctagca tcagttgaag

20

<210> 513

<211> 27

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           sequence  
  
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 tttaaaagct ccactccgct 20  
  
  
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           sequence  
  
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 ccctgaagcc tgacagtgt 19  
  
  
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           sequence  
  
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 ctgcagtgtc ccagagtgga cctctt 26

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tgtggtcagg tgcatgtaga ta 22

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<400> 518  
ccccttctac aacttccaag ac 22

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caacaaataa cactgtgact ccaacctca 29

<210> 520  
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<400> 520  
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<210> 521  
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<400> 521  
cccagtttcc actcactcat ta 22

<210> 522  
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<220>  
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<400> 522  
acagtgtctct tggccctgca tgt 23

<210> 523  
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<400> 523  
acaggatata gaccccaaatt gg 22

<210> 524  
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<220>

<223> Description of Artificial Sequence: PCR Primer  
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gcctgcctta tctttctgaa ct

22

<210> 525

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR Primer  
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<400> 525

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26

<210> 526

<211> 22

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<400> 526

cactcagctt gatcttcttc gt

22

<210> 527

<211> 19

<212> DNA

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<400> 527

accagctcca aggaacatg

19

<210> 528  
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<210> 529  
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<400> 529  
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<210> 530  
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<220>  
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sequence

<400> 530  
agtgttgatg ggaaaatgat ga 22

<210> 531  
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<220>  
<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 531  
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<210> 532  
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sequence

<400> 532  
ccccagcttg aaggagatc 19

<210> 533  
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<220>  
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sequence

<400> 533  
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<210> 534  
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<220>  
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sequence

<400> 534  
ccaaactttc cagatctttc caaagctg 28

<210> 535  
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<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 535

tgacctggat atttggattc tg

22

<210> 536

<211> 22

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 536

acctgctgaa ggaactcact ct

22

<210> 537

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

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<400> 537

ctcacaggac gaggtagctg ccttct

26

<210> 538

<211> 22

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<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 538

gcaaaagtgc ttctcacta tg

22



<210> 539  
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sequence

<400> 539  
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<210> 540  
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sequence

<400> 540  
tcctagccta tagctactct tccgttcca 29

<210> 541  
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sequence

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atcagagcag gaaaccaaga ag 22

<210> 542  
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<400> 542  
ggactttgat cccctacaga tg 22

<210> 543  
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sequence

<400> 543  
tcaaatagaag aggacatcct ctccat 26

<210> 544  
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sequence

<400> 544  
ctgagaacgg atagctgaga ac 22

<210> 545  
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<223> Description of Artificial Sequence: PCR Primer  
sequence

<400> 545  
aaggctcaga acagcaggat 20

<210> 546  
<211> 24  
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